THE

ELEMENTS and *PRACTICE*

OF

RIGGING

AND

SEAMANSHIP.

By David Steel.

ILLUSTRATED WITH ENGRAVINGS.

IN TWO VOLUMES.——VOL. II.

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James Sever: presented him by his much esteem'd friend Mr John Fisher of Portsmouth N. H.

SEAMANSHIP.

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THE THEORY AND PRACTICE OF WORKING SHIPS.

AFTER having furniſhed a ſhip with maſts, yards, ſails, blocks, anchors, &c. which are the requiſites for putting to ſea, it becomes no improper tranſition to paſs thence to the uſe which is made of them in the working of ſhips; which, like all other ſciences, conſiſts of theory and practice. The knowledge of a theory, which is founded upon unerring principles, is ſurely indiſpenſible for the correct attainment of the practice which it guides; and it cannot therefore be unuſeful to ſhew that the theory of working ſhips is ſupported by mathematical principles, and capable of convincing demonſtration.

M. Bourdé de Villehuet, an officer in the ſervice of the French Eaſt India Company, has been the moſt ſucceſsful in explaining this theory, in his Le Manœuvrier, publiſhed at Paris in 1769. He has, in that, improved upon the works of Pere Hoſte, which were publiſhed above 100 years ago; and has clearly demonſtrated his theory, without requiring ſuch extent of geometrical knowledge as is neceſſary to the underſtanding of the elaborate treatiſe of M. Bouguer. To the theoretic part he has ſuperadded directions for the performance of many evolutions; and has (which renders them particularly valuable) demonſtrated the agreement of each with the mathematical principles he had before laid down. To have paſſed over a work of ſuch character would have been highly blameable: we have therefore tranſlated that part of M. Bourdé's work; and we have incorporated with it directions for the performance of many operations which were unnoticed by that gentleman. The whole, we truſt, will form the moſt extenſive collection ever yet brought together; and all founded, we equally hope, upon the ſureſt principles.

We do not affect to give ſpecific directions for every poſſible ſituation of a ſhip at ſea; becauſe, if ſuch directions could be given, they would moſt likely be unſerviceable from their bulk: but, in explaining the theory upon which all maritime operations ought to be founded, we impart an unfailing ſource of knowledge to the ſeaman. Thoſe principles will be his ſureſt ſafeguard in the hour of danger, and his beſt aſſiſtant in the time of untried difficulty.

EXPLANATION OF THE TERMS USED IN SEAMANSHIP.

ABACK. The ſituation of the ſails, when their ſurfaces are preſſed aft againſt the maſt by the force of the wind.

ABAFT. The hinder part of a ſhip, or towards the ſtern. It alſo ſignifies *further aft* or *nearer to the ſtern;* as, the barricade ſtands ABAFT the main maſt; that is, nearer to the ſtern.

ABAFT THE BEAM denotes the relative ſituation of any object with the ſhip, when the object is placed in any part of that arch of the horizon which is contained between a line at right angles with the keel and that point of the compaſs which is directly oppoſite to the ſhip's courſe.

ABOARD. The inſide of a ſhip.

ABOARD MAIN TACK! The order to draw the lower corner of the mainſail down to the cheſs-tree.

ABOUT. The ſituation of a ſhip as ſoon as ſhe has tacked or changed her courſe.

ABOUT SHIP! The order to the ſhip's crew to prepare for tacking.

ABREAST. The ſituation of two or more ſhips lying with their ſides parallel, and their heads equally advanced; in which caſe, they are abreaſt of each other. But, if their ſides be not parallel, then that ſhip, which is in a line with the beam of the other, is ſaid to be abreaſt of her. With regard to objects within the ſhip, it implies on a line parallel with the beam, or at right angles with the ſhips length. ABREAST OF ANY PLACE, means off or directly oppoſite to it.

ADRIFT. The ſtate of a ſhip broken from her moorings, and driving about without controul.

AFLOAT. Buoyed up by the water from the ground.

AFORE. All that part of a ſhip which lies forward, or near the ſtem. It alſo ſignifies *further forward*; as, the manger ſtands AFORE the fore maſt; that is, nearer to the ſtem.

AFT. Behind, or near the ſtern of the ſhip.

AFTER. A phraſe applied to any object in the hinder part of the ſhip, as the after-hatchway, the after-ſails, &c.

A-GROUND. The ſituation of a ſhip when her bottom or any part of it reſts on the ground.

A-HEAD. Any thing which is ſituated on that point of the compaſs to which a ſhip's ſtem is directed, is ſaid to be a-head of her.

A-HULL. The ſituation of a ſhip, when all her ſails are furled and her helm is laſhed to the lee ſide; by which ſhe lies nearly with her ſide to the wind and ſea, her head being ſomewhat inclined to the direction of the wind.

A-LEE. The poſition of the helm when it is puſhed down to the lee ſide.

ALL IN THE WIND. The ſtate of a ſhip's ſails, when they are parallel to the direction of the wind, ſo as to ſhake or ſhiver.

ALL HANDS HOAY! The call by which all the ſhip's company are ſummoned upon deck.

ALOFT. Up in the tops, at the maſt-heads, or any where about the higher rigging.

ALONG-SIDE. Side-by-ſide, or joined to a ſhip, wharf, &c.

ALONG-SHORE. Along the coaſt; a courſe which is in ſight of the ſhore, and nearly parallel to it.

AMAIN. At once, ſuddenly: as LET GO AMAIN!

AMIDSHIPS. The middle of a ſhip, either with regard to her length or breadth.

To ANCHOR. To let the anchor fall into the ground, for the ſhip to ride thereby.

ANCHORAGE. Ground, fit to hold a ſhip by her anchor.

THE ANCHOR IS A COCK-BILL. The ſituation of the anchor, when it drops down perpendicularly from the cat-head, ready to be ſunk at a moment's warning.

AN-END. The poſition of any maſt, &c. when erected perpendicularly on the deck. The top-maſts are ſaid to be AN-END, when they are hoiſted up to their uſual ſtations.

APEEK. Perpendicular to the anchor; the cable having been drawn ſo tight as to bring the ſhip directly over it. The anchor is then ſaid to be APEEK.

ASHORE. On the ſhore, as oppoſed to ABOARD. It alſo means AGROUND.

ASTERN. Any diſtance behind a ſhip, as oppoſed to A-HEAD.

AT ANCHOR. The ſituation of a ſhip riding by her anchor.

ATHWART. Acroſs the line of a ſhip's courſe.

ATHWART-HAWSE. The ſituation of a ſhip when driven by accident acroſs the fore-part of another, whether they touch or are at a ſmall diſtance from each other, the tranſverſe poſition of the former being principally underſtood.

ATHWART THE FORE FOOT denotes the flight of a cannon-ball fired from one ſhip acroſs the line of another's courſe, but a-head of her.

ATHWART-SHIPS. Reaching, or in a direction, acroſs the ſhip from one ſide to the other.

ATRIP. When applied to the anchor, it means that the anchor is drawn out of the ground, and hangs in a perpendicular direction, by the cable or buoy-rope. The topſails are ſaid to be ATRIP, when they are hoiſted up to the maſt-head, or to their utmoſt extent.

AVAST! The command to ſtop, or ceaſe, in any operation.

AWEIGH. The ſame as ATRIP, when applied to the anchor.

To BACK THE ANCHOR. To carry out a ſmall anchor a-head of the large one, in order to ſupport it in bad ground, and to prevent it from looſening or coming home.

To BACK ASTERN, in rowing, is to impel the boat with her ſtern foremoſt, by means of the oars.

To BACK THE SAILS. To arrange them in a ſituation that will occaſion the ſhip to move a-ſtern.

To BAGPIPE THE MIZEN. To lay it aback, by bringing the ſheet to the mizen ſhrouds.

To BALANCE. To contract a ſail into a narrower compaſs, by folding up a part of it at one corner. BALANCING is peculiar only to the mizen of a ſhip, and the mainſail of thoſe veſſels wherein it is extended by a boom.

BARE POLES. When a ſhip has no ſail ſet, ſhe is UNDER BARE POLES.

BEARING. The ſituation of one place from another, with regard to the points of the compaſs. The ſituation alſo of any diſtant object, eſtimated from ſome part of the ſhip, according to her ſituation: theſe latter bearings are either ON THE BEAM; BEFORE THE BEAM; ABAFT THE BEAM; ON THE LEE OR WEATHER BOW; ON THE LEE OR WEATHER QUARTER; A-HEAD; OR A-STERN.

BEAR A-HAND. Make haſte, diſpatch.

To BEAR IN WITH THE LAND is when a ſhip ſails towards the ſhore.

To BEAR OFF. To thruſt or keep off from the ſhip's ſide, &c. any weight, when hoiſting.

To BEAR UP, OR AWAY. The act of changing a ſhips courſe, to make her ſail more before the wind.

BEATING TO-WINDWARD. The making a progreſs at ſea againſt the direction of the wind, by ſteering alternately cloſe-hauled on the ſtarboard and larboard tacks.

To BECALM. To intercept the current of the wind, in its paſſage to a ſhip, by any contiguous object, as a ſhore above her ſails, a high ſea behind, &c. and thus one ſail is ſaid to becalm another.

BEFORE THE BEAM denotes an arch of the horizon comprehended between the line of the beam and that point of the compaſs on which the ſhip ſtems.

To BELAY. To faſten a rope, by winding it ſeveral times round a cleat or pin.

To BEND A SAIL is to affix it to its proper yard or ſtay.

BENEAPED. See NEAPED.

BETWEEN-DECKS. The ſpace contained between any two decks of a ſhip.

BILGE-WATER is that which, by reaſon of the flatneſs of a ſhip's bottom, lies on her floor, and cannot go to the well of the pump.

BIRTH. The ſtation in which a ſhip rides at anchor, either alone or in a fleet; the due diſtance between two ſhips; and alſo a room or apartment on board for the officers of a meſs.

To BITT THE CABLE is to confine the cable to the bitts, by one turn under the croſs-piece and another turn round the bitt-head. In this poſition it may be either kept fixed, or it may be veered away.

BITTER. The turn of the cable round the bitts.

BITTER-END. That part of the cable which ſtays within-board round about the bitts when the ſhip is at anchor.

A BOARD is the diſtance run by a ſhip on one tack; thus they ſay, *a good board*, when a ſhip does not go to leeward of her courſe; a *ſhort board* and a *long board*, according to the diſtance run.

BOARD-AND-BOARD. When two ſhips come ſo near as to touch each other, or when they lie ſide-by-ſide.

To BOARD A SHIP. To enter an enemy's ſhip in an engagement.

BOLD SHORE. A ſteep coaſt, permitting the cloſe approach of ſhipping.

BOOT-TOPPING. Cleaning the upper part of a ſhip's bottom, or that part which lies immediately under the ſurface of the water; and daubing it over with tallow, or with a mixture of tallow, ſulphur, roſin, &c.

BOTH SHEETS AFT. The ſituation of a ſhip ſailing right before the wind.

BOW-GRACE. A frame of old rope or junk, laid out at the bows, ſtems, and ſides, of ſhips, to prevent them from being injured by flakes of ice.

To BOWSE. To pull upon any body with a tackle, in order to remove it.

BOXHAULING. A particular method of veering a ſhip, when the ſwell of the ſea renders tacking impracticable.

BOXING. An operation ſomewhat ſimilar to BOXHAULING. It is performed by laying the headſails aback, to receive the greateſt force of the wind in a line perpendicular to their ſurfaces, in order to return the ſhip's head into the line of her courſe, after ſhe had inclined to windward of it.

To BRACE THE YARDS. To move the yards, by means of the braces, to any direction required.

To BRACE ABOUT. To brace the yards round for the contrary tack.

To BRACE SHARP. To brace the yards to a poſition, in which they will make the ſmalleſt poſſible angle with the keel, for the ſhip to have head-way.

To BRACE-TO. To eaſe off the lee-braces, and round-in the weather braces, to aſſiſt the motion of the ſhip's head in tacking.

To BRAIL UP. To haul up a ſail by means of the brails, for the more readily furling it when neceſſary.

BRAILS. A name peculiar only to certain ropes belonging to the mizen, uſed to truſs it up to the maſt. But it is likewiſe applied to all the ropes, which are employed in hauling up the bottoms, lower corners, and ſkirts, of the other great ſails.

To BREAK BULK. The act of beginning to unload a ſhip.

To BREAK SHEER. When a ſhip at anchor is forced, by the wind or current, from that poſition in which ſhe keeps her anchor moſt free of herſelf and moſt firm in the ground, ſo as to endanger the tripping of her anchor, ſhe is ſaid to break her ſheer.

BREAMING. Burning off the filth from a ſhip's bottom.

BREAST-FAST. A rope employed to confine a ſhip ſideways to a wharf, or to ſome other ſhip.

To BRING BY THE LEE. See TO BROACH-TO.

To BRING-TO. To check the courſe of a ſhip when ſhe is advancing, by arranging the ſails in ſuch a manner as that they ſhall counteract each other, and prevent her from either retreating or advancing.

To BROACH-TO. To incline ſuddenly to windward of the ſhip's courſe, ſo as to preſent her ſide to the wind, and endanger her overſetting. The difference between BROACHING-TO and BRINGING BY THE LEE may be thus defined. Suppoſe a ſhip under great ſail is ſteering South, having the wind at NNW; then Weſt is the weather-ſide, and Eaſt the lee ſide. If, by any accident, her head turns round to the weſtward, ſo as that her ſails are all taken a-back on the weather-ſide, ſhe is ſaid to BROACH-TO. If, on the contrary, her head declines ſo far eaſtward as to lay her ſails a-back on that ſide which was the lee-ſide, it is called BRINGING BY THE LEE.

BROADSIDE. A diſcharge of all the guns on one ſide of a ſhip, both above and below.

BROKEN-BACKED. The ſtate of a ſhip which is ſo looſened in her frame, as to drop at each end.

BY THE BOARD. Over the ſhip's ſide.

BY THE HEAD. The ſtate of a ſhip when drawing more water forward than a-ſtern.

BY THE WIND. The courſe of a ſhip as near as poſſible to the direction of the wind, which is generally within ſix points of it.

To CAREEN. To incline a ſhip on one ſide ſo low down, by the application of a ſtrong purchaſe to her maſts, as that her bottom on the other ſide, may be cleanſed by breaming.

CASTING. The motion of falling-off, ſo as to bring the direction of the wind on either ſide of the ſhip, after it had blown ſome time right a-head. It is particularly applied to a ſhip about to weigh anchor.

To CAT THE ANCHOR is to hook the cat-block to the ring of the anchor, and haul it up cloſe to the cat-head.

CAT's-PAW. A light air of wind perceived at a diſtance in a calm, ſweeping the ſurface of the ſea very lightly, and dying away before it reaches the ſhip.

CENTER. This word is applied to that ſquadron of a fleet, in line of battle, which occupies the middle of the line; and to that column (in the order of ſailing) which is between the weather and lee columns.

CHANGE THE MIZEN. Bring the mizen yard over to the other ſide of the maſt.

CHAPPELLING. The act of turning a ſhip round in a light breeze of wind when ſhe is cloſe-hauled, ſo as that ſhe will lie the ſame way ſhe did before. This is uſually occaſioned by negligence in ſteering, or by a ſudden change of wind.

CHASE. A veſſel purſued by ſome other.

CHASER. The veſſel purſuing.

CHEERLY. A phraſe implying heartily, quickly, cheerfully.

To CLAW OFF. The act of turning to windward from a lee-ſhore, to eſcape ſhipwreck, &c.

CLEAR is variouſly applied. The weather is ſaid to be CLEAR, when it is fair and open; the ſea-coaſt is CLEAR, when the navigation is not interrupted by rocks, &c. it is applied to cordage, cables, &c. when they are diſentangled, ſo as to be ready for immediate ſervice. In all theſe ſenſes it is oppoſed to FOUL.

To CLEAR THE ANCHOR is to get the cable off the flukes, and to diſencumber it of ropes ready for dropping.

CLEAR HAWSE. When the cables are directed to their anchors without lying athwart the ſtem.

To CLEAR THE HAWSE is to untwiſt the cables when they are entangled by having either a croſs, an elbow, or a round turn.

CLENCHED. Made faſt, as the cable is to the ring of the anchor.

CLOSE-HAULED. That trim of the ſhip's ſails, when ſhe endeavours to make a progreſs in the neareſt direction poſſible towards that point of the compaſs from which the wind blows.

To CLUB-HAUL. A method of tacking a ſhip when it is expected ſhe will miſs ſtays on a lee-ſhore.

To CLUE-UP. To haul up the clues of a ſail to its yard, by means of the clue-lines.

COASTING. The act of making a progreſs along the ſea-coaſt of any country.

To COIL THE CABLE. To lay it round in a ring, one turn over another.

To COME HOME. The anchor is ſaid to come home, when it looſens from the ground by the effort of the cable, and approaches the place where the ſhip floated, at the length of her moorings.

COMING-TO denotes the approach of a ſhip's head to the direction of the wind.

COURSE. The point of the compaſs on which a ſhip ſteers.

CRANK. The quality of a ſhip, which, for want of ſufficient ballaſt, is rendered incapable of carrying ſail without being expoſed to the danger of overſetting.

To CROWD SAIL. To carry more ſail than ordinary.

CUNNING. The art of directing the ſteerſman to guide the ſhip in her proper courſe.

To CUT AND RUN. To cut the cable and make ſail inſtantly, without waiting to weigh anchor.

To DEADEN A SHIP'S WAY. To impede her progreſs through the water.

DEAD-WATER. The eddy of water, which appears like whirl-pools, cloſing in with the ſhip's ſtern as ſhe ſails on.

DISMASTED. The ſtate of a ſhip that has loſt her maſts.

DOUBLING. The act of ſailing round, or paſſing beyond a cape or point of land.

DOUBLING-UPON The act of incloſing any part of a hoſtile fleet between two fires, or of cannonading it on both ſides.

To DOWSE. To lower ſuddenly, or ſlacken.

To DRAG THE ANCHOR. To trail it along the bottom, after it is looſened from the ground.

To DRAW. When a ſail is inflated by the wind, ſo as to advance the veſſel in her courſe, the ſail is ſaid TO DRAW; and ſo, TO KEEP ALL DRAWING is to inflate all the ſails.

DRIFT. The angle which the line of a ſhip's motion makes with the neareſt meridian, when ſhe drives with her ſide to the wind and waves, and not governed by the power of the helm. It alſo implies the diſtance which the ſhip drives on that line.

DRIVING. The ſtate of being carried at random, as impelled by a ſtorm or current. It is generally expreſſed of a ſhip, when accidentally broke looſe from her anchors or moorings.

DROP. Uſed ſometimes to denote the depth of a ſail; as, the fore topſail DROPS twelve yards.

To DROP ANCHOR. Uſed ſynonimouſly with TO ANCHOR.

To DROP A-STERN. The retrograde motion of a ſhip.

To EASE, TO EASE AWAY, OR TO EASE OFF. To ſlacken gradually, thus they ſay, EASE the bowline, EASE the ſheet.

EASE THE SHIP! The command given by the pilot to the ſteerſman, to put the helm hard a-lee, when the ſhip is expected to plunge her fore part deep in the water, when cloſe-hauled.

To EDGE AWAY. To decline gradually from the ſhore, or from the line of the courſe which the ſhip formerly held, in order to go more large.

To EDGE IN WITH. To advance gradually towards the ſhore or any other object.

ELBOW IN THE HAWSE. A particular twiſt in the cables by which a ſhip is moored; explained at length hereafter in the PRACTICE OF WORKING SHIPS.

END-FOR-END. A reverſal of the poſition of any thing is turning it END-FOR-END. It is applied alſo to a rope that has run quite out of the block in which it was reeved; or to a cable which has all run out of the ſhip.

END-ON. When a ſhip advances to a ſhore, rock, &c. without an apparent poſſibility of preventing her, ſhe is ſaid to go END-ON for the ſhore, &c.

EVEN-KEEL. When the keel is parallel with the horizon, a ſhip is ſaid to be upon an EVEN-KEEL.

FAIR. A general term for the diſpoſition of the wind when favourable to a ſhip's courſe.

FAIR-WAY. The channel of a narrow bay, river, or haven, in which ſhips uſually advance in their paſſage up and down.

To FALL A-BOARD OF. To ſtrike or encounter another ſhip, when one or both are in motion.

To FALL A-STERN. The motion of a ſhip with her ſtern foremoſt.

To FALL CALM. To become in a ſtate of reſt by a total ceſſation of the wind.

To FALL DOWN. To ſail or be towed down a river nearer towards its mouth.

FALLING-OFF denotes the motion of the ſhip's head from the direction of the wind.

FALL NOT OFF! The command to the ſteerſman to keep the ſhip near the wind.

To FETCH WAY. To be ſhaken or agitated from one ſide to another ſo as to looſen any thing which was before fixed.

To FILL. To brace the ſails ſo as to receive the wind in them, and advance the ſhip in her courſe, after they had been either ſhivering or braced a-back.

To FISH THE ANCHOR. To draw up the flukes of the anchor towards the top of the bow, in order to ſtow it, after having been catted.

FLAT-AFT. The ſituation of the ſails when their ſurfaces are preſſed aft againſt the maſt by the force of the wind.

To FLAT-IN. To draw in the aftermoſt lower corner or clue of a ſail towards the middle of the ſhip, to give the ſail a greater power to turn the veſſel.

To FLAT-IN FORWARD. To draw in the fore ſheet, jib ſheet, and fore ſtayſail-ſheet towards the middle of the ſhip.

FLAW. A ſudden breeze or guſt of wind.

FLOATING. The ſtate of being buoyed up by the water from the ground.

FLOOD-TIDE. The ſtate of a tide when it flows or riſes.

FLOWING SHEETS. The poſition of the ſheets of the principal ſails when they are looſened to the wind, ſo as to receive it into their cavities more nearly perpendicular than when cloſe-hauled, but more obliquely than when the ſhip ſails before the wind. A ſhip going two or three points large has FLOWING SHEETS.

FORE. That part of a ſhip's frame and machinery that lies near the ſtem.

FORE-AND-AFT. Throughout the whole ſhip's length. Lengthways of the ſhip.

To FORE-REACH UPON. To gain ground of ſome other ſhip.

To FORGE OVER. To force a ſhip violently over a ſhoal, by a great quantity of ſail.

FORWARD. Towards the fore part of a ſhip.

FOUL. Is uſed in oppoſition both to CLEAR and FAIR. As oppoſed to clear, we ſay FOUL WEATHER; FOUL BOTTOM; FOUL GROUND; FOUL ANCHOR; FOUL HAWSE. As oppoſed to fair, we ſay FOUL WIND.

To FOUNDER. To ſink at ſea, by filling with water.

To FREE. Pumping is ſaid to FREE the ſhip when it diſcharges more water than leaks into her.

To FRESHEN. When a gale increaſes it is ſaid TO FRESHEN.

To FRESHEN THE HAWSE. Veering out or heaving in a little cable, to let another part of it endure the ſtreſs at the hawſe-holes. It is alſo applied to the act of renewing the ſervice round the cable at the hawſe-holes.

FRESH WAY. When a ſhip increaſes her velocity ſhe is ſaid to get FRESH WAY.

FULL. The ſituation of the ſails, when they are kept diſtended by the wind.

FULL-AND-BY. The ſituation of a ſhip, with regard to the wind, when cloſe-hauled; and ſailing, ſo as to ſteer neither too nigh the direction nor to deviate to leeward.

To FURL. To wrap or roll a ſail cloſe up to the yard or ſtay to which it belongs, and winding a cord round it, to keep it faſt.

To GAIN THE WIND. To arrive on the weather-ſide, or to windward of, ſome ſhip or fleet in ſight, whenboth are ſailing as near the wind as poſſible.

To GATHER. A ſhip is ſaid to GATHER on another, as ſhe comes nearer to her.

GIMBLETING. The action of turning the anchor round by the ſtock, ſo that the motion of ſtock appears ſimilar to that of the handle of a gimblet, when employed to turn the wire.

To GIVE CHASE TO. To purſue a ſhip or fleet.

GOOSE-WINGS OF A SAIL. The clues or lower corners of a ſhip's mainſail or foreſail, when the middle part is furled or tied up to the yard.

GRIPING. The inclination of a ſhip to run to windward of her proper courſe.

GROUNDING. The laying a ſhip a-ſhore, in order to repair her. It is alſo applied to running a-ground accidentally.

GROUND-TACKLE. Every thing belonging to a ſhip's anchors, and which are neceſſary for anchoring or mooring; ſuch as cables, hawſers, tow-lines, warps, buoy-ropes, &c.

GROWING. Stretching out; applied to the direction of the cable from the ſhip towards the anchors; as, the cable GROWS on the ſtarboard bow.

GYBING. The act of ſhifting any boom-ſail from one ſide of the maſt to the other.

To HAIL. To ſalute or ſpeak to a ſhip at a diſtance.

To HAND THE SAILS. The ſame as to FURL them.

HAND-OVER-HAND. The pulling of any rope, by the men's paſſing their hands alternately one before the other or one above another. A ſailor is ſaid to go aloft HAND-OVER-HAND when he climbs into the tops by a ſingle rope, dexterouſly throwing one hand over the other.

HANDSOMELY. Gradually, as LOWER HANDSOMELY.

HANK-FOR-HANK. When two ſhips tack and make a progreſs to windward together.

HARD A-LEE. The ſituation of the helm, when puſhed cloſe to the lee ſide of the ſhip.

HARD A-WEATHER. The ſituation of the helm, when puſhed cloſe to the weather ſide of the ſhip.

To HAUL. To pull a ſingle rope without the aſſiſtance of blocks.

To HAUL THE WIND. To direct the ſhip's courſe nearer to the point from which the wind blows.

HAWSE. The ſituation of the cables before the ſhip's ſtem, when ſhe is moored with two anchors out from forward. It alſo denotes any ſmall diſtance a-head of a ſhip, or the ſpace between her head and the anchors employed to ride her.

HEAD-FAST. A rope employed to confine the head of a ſhip to a wharf or to ſome other ſhip.

HEADMOST. The ſituation of any ſhip or ſhips which are the moſt advanced in a fleet.

HEAD-SAILS. All the ſails which belong to the fore-maſt and bowſprit.

HEAD-SEA. When the waves meet the head of a ſhip in her courſe, they are called a HEAD-SEA. It is likewiſe applied to a large ſingle wave coming in that direction.

HEAD-TO-WIND. The ſituation of a ſhip when her head is turned to the point from which the wind blows.

HEAD-WAY. The motion of advancing at ſea.

To HEAVE. To turn about a capſtern, or other machine of the like kind, by means of bars, handſpecs, &c.

To HEAVE A-HEAD. To advance the ſhip by heaving-in the cable or other rope faſtened to an anchor at ſome diſtance before her.

To HEAVE A-PEEK. To heave-in the cable, till the anchor is a-peek.

To HEAVE A-STERN. To move a ſhip backwards by an operation ſimilar to that of HEAVING A-HEAD.

To HEAVE DOWN. To CAREEN.

To HEAVE-IN THE CABLE. To draw the cable into the ſhip, by turning the capſtern.

To HEAVE IN STAYS. To bring a ſhip's head to the wind, by a management of the ſails and rudder, in order to get on the other tack.

To HEAVE OUT. To unfurl or looſe a ſail; more particularly applied to the ſtayſails: thus we ſay, looſe the topſails and HEAVE OUT the ſtayſails.

To HEAVE SHORT. To draw ſo much of the cable into the ſhip, as that ſhe will be almoſt perpendicularly over her anchor.

To HEAVE TIGHT or TAUGHT. To turn the capſtern round, till the rope or cable becomes ſtraitened.

To HEAVE THE CAPSTERN. To turn it round.

To HEAVE THE LEAD. To throw the lead overboard, in order to find the depth of water.

To HEAVE THE LOG. To throw the log overboard, in order to calculate the velocity of the ſhip's way.

To HEEL. To ſtoop or incline to one ſide; thus they ſay TO HEEL TO PORT, that is, to heel to the larboard ſide.

HELM A-LEE! A direction to put the helm over to the lee ſide.

HELM A-WEATHER! An order to put the helm over to the windward ſide.

HIGH-AND-DRY. The ſituation of a ſhip when ſo far run aground as to be ſeen dry upon the ſtrand.

To HOIST. To draw up any body by the aſſiſtance of one or more tackles. Pulling by means of a ſingle block is never termed HOISTING, except only the drawing of the ſails upwards along the maſts or ſtays.

To HOLD ITS OWN is applied to the relative ſituation of two ſhips when neither advances upon the other; each is then ſaid to HOLD ITS OWN. It is likewiſe ſaid of a ſhip which, by means of contrary winds, cannot make a progreſs towards her deſtined port, but which however keeps nearly the diſtance ſhe had already run.

To HOLD ON. To pull back or retain any quantity of rope acquired by the effort of a capſtern, windlaſs, tackle, block, &c.

HOME implies the proper ſituation of any object; as, to haul HOME the topſail ſheets is to extend the bottom of the topſail to the lower yard, by means of the ſheets. In ſtowing a hold, a caſk, &c. is ſaid to be HOME, when it lies cloſe to ſome other object.

To HULL A SHIP. To fire cannot balls into her hull within the point-blank range.

HULL-TO. The ſituation of a ſhip when ſhe lies with all her ſails furled; as in TRYING.

IN STAYS. See To HEAVE in ſtays.

KECKLED. Any part of a cable, covered over with old ropes, to preſerve its ſurface from rubbing againſt the ſhip's bow or fore foot.

To KEEP AWAY. To alter the ſhip's courſe to one rather more large, for a little time, to avoid ſome ſhip, danger, &c. KEEP AWAY is likewiſe ſaid to the ſteerſman, who is apt to go to windward of the ſhip's courſe.

To KEEP FULL. To keep the ſails diſtended by the wind.

To KEEP HOLD OF THE LAND. To ſteer near to or in ſight of the land.

To KEEP OFF. To ſail off or keep at a diſtance from the ſhore.

To KEEP THE LAND A-BOARD. The ſame as TO KEEP HOLD OF THE LAND.

To KEEP THE LUFF. To continue cloſe to the wind.

To KEEP THE WIND. The ſame as TO KEEP THE LUFF.

KNOT. A diviſion of the log-line, anſwering, in the calculation of the ſhip's velocity, to one mile.

To LABOUR. To roll or pitch heavily in a turbulent ſea.

LADEN IN BULK. Freighted with a cargo not packed, but lying looſe, as corn, ſalt, &c.

LAID-UP. The ſituation of a ſhip when moored in a harbour, for want of employ.

LAND-FALL. The firſt land diſcovered after a ſea-voyage. Thus a GOOD LAND FALL implies the land expected or deſired; a BAD LAND-FALL the reverſe.

LAND-LOCKED. The ſituation of a ſhip ſurrounded with land, ſo as to exclude the proſpect of the ſea, unleſs over ſome intervening land.

LARBOARD. The left ſide of a ſhip, looking towards the head.

LARBOARD-TACK. The ſituation of a ſhip when ſailing with the wind blowing upon her larboard ſide.

LAYING THE LAND. The motion of a ſhip which increaſes her diſtance from the coaſt, ſo as to make it appear lower and ſmaller.

LEADING-WIND. A fair wind for a ſhip's courſe.

LEAK. A chink or breach in the ſides or bottom of a ſhip, through which the water enters into the hull.

To LEAK. To admit water into the hull through chinks or breaches in the ſides or bottom.

LEE. That part of the hemiſphere to which the wind is directed, to diſtinguiſh it from the other part which is called to windward.

LEE-GAGE. A ſhip or fleet to leeward of another is ſaid to have the lee-gage.

LEE-LURCHES. The ſudden and violent rolls which a ſhip often takes to leeward, in a high ſea; particularly when a large wave ſtrikes her on the weather ſide.

LEE OF THE SHORE. See UNDER THE LEE OF THE SHORE.

LEE-QUARTER. That quarter of a ſhip which is on the lee ſide.

LEE-SHORE. That ſhore upon which the wind blows.

LEE SIDE. That half of a ſhip lengthwiſe, which lies between a line drawn through the middle of her length and the ſide which is furtheſt from the point of the wind.

To LEEWARD. Towards that part of the horizon to which the wind blows.

LEEWARD SHIP. A ſhip that falls much to leeward of her courſe, when ſailing cloſe-hauled.

LEEWARD TIDE. A tide that ſets to leeward.

LEE WAY. The lateral movement of a ſhip to leeward of her courſe; or the angle which the line of her way makes with a line in the direction of her keel.

To LIE ALONG. To be preſſed down ſideways by a weight of ſail, in a freſh wind.

To LIE-TO. To retard a ſhip in her courſe, by arranging the ſails in ſuch a manner as to counteract each other with nearly an equal effort, and render the ſhip almoſt immoveable, with reſpect to her progreſſive motion or headway.

A LONG SEA. An uniform motion of long waves.

LOOK-OUT. A watchful attention to ſome important object or event that is expected to ariſe.

To LOOSE. To unfurl or caſt looſe any ſail.

To LOWER. To eaſe down gradually.

LUFF! The order to the ſteerſman to put the helm towards the lee ſide of the ſhip, in order to ſail nearer to the wind.

To MAKE A BOARD. To run a certain diſtance upon one tack, in beating to windward.

To MAKE FOUL WATER. To muddy the water, by running in ſhallow places, ſo that the ſhip's keel diſturbs the mud at bottom.

To MAKE SAIL. To increaſe the quantity of ſail already ſet, either by unreefing or by ſetting others.

To MAKE STERNWAY. To retreat or move with the ſtern foremoſt.

To MAKE THE LAND. To diſcover it from afar.

To MAKE WATER. To leak.

To MAN THE YARD, &c. To place men on the yard, in the tops, down the ladder, &c. to execute any neceſſary duties.

MASTED. Having all her maſts complete.

To MIDDLE A ROPE. To double it into two equal parts.

MIDSHIPS. See AMIDSHIPS.

To MISS STAYS. A ſhip is ſaid to MISS STAYS, when her head will not fly up into the direction of the wind, in order to get her on the other tack.

MOORING. Securing a ſhip in a particular ſtation by chains or cables, which are either faſtened to an adjacent ſhore or to anchors at the bottom.

MOORING SERVICE. When a ſhip is moored, and rides at one cable's length, the mooring ſervice is that which is at the firſt ſplice.

NEAPED. The ſituation of a ſhip left aground on the height of a ſpring tide, ſo that ſhe cannot be floated till the return of the next ſpring tide.

NEAR or NO NEAR. An order to the ſteerſman not to keep the ſhip ſo cloſe to the wind.

OFF-AND-ON. When a ſhip is beating to windward, ſo that by one board ſhe approaches towards the ſhore, and by the other ſtands out to ſea, ſhe is ſaid to ſtand OFF-AND-ON ſhore.

OFFING. Out at ſea, or at a competent diſtance from the ſhore, and generally out of anchor ground.

OFFWARD. From the ſhore; as when a ſhip lies aground and leans towards the ſea, ſhe is ſaid to heel OFFWARD.

ON THE BEAM. Any diſtance from the ſhip on a line with the beams, or at right angles with the keel.

ON THE BOW. An arch of the horizon, comprehending about four points of the compaſs on each ſide of that point to which the ſhip's head is directed. Thus, they ſay, the ſhip in ſight bears three points ON THE STARBOARD-BOW; that is, three points, towards the right-hand, from that part of the horizon which is right a-head.

ON THE QUARTER. An arch of the horizon, comprehending about four points of the compaſs on each ſide of that point to which the ſhip's ſtern is directed. See ON THE BOW.

OPEN. The ſituation of a place expoſed to the wind and ſea. It is alſo expreſſed of any diſtant object to which the ſight or paſſage is not intercepted.

OPEN HAWSE. When a ſhip at her moorings has her cables lead ſtrait to her anchors, without croſſing, ſhe is ſaid to ride with an OPEN HAWSE.

OVER-BOARD. Out of the ſhip.

OVER-GROWN SEA is expreſſed of the ocean when the ſurges and billows riſe extremely high.

To OVER-HAUL. To open and extend the ſeveral parts of a tackle, or other aſſemblage of ropes, thereby fitting them the better for running eaſily.

OVER-RAKE. When a ſhip at anchor is expoſed to a head-ſea, the waves of which break in upon her, the waves are ſaid to OVER-RAKE her.

OVER-SET. A ſhip is OVER-SET, when her keel turns upwards.

OUT-OF-TRIM. The ſtate of a ſhip, when ſhe is not properly balanced for the purpoſes of navigation.

PARLIAMENT-HEEL. The ſituation of a ſhip when ſhe is made to ſtoop a little to one ſide, ſo as to clean the upper part of her bottom on the other ſide. See BOOT-TOPPING.

PARTING. Being driven from the anchors, by the breaking of the cable.

To PAWL THE CAPSTERN. To fix the pawls, ſo as to prevent the capſtern from recoiling, during any pauſe of heaving.

To PAY. To daub or cover the ſurface of any body, in order to preſerve it from the injuries of the weather, &c.

To PAY AWAY or PAY OUT. To ſlacken a cable or other rope, ſo as to let it run out for ſome particular purpoſe.

To PAY OFF. To move a ſhip's head to leeward.

To PEEK THE MIZEN. To put the mizen-yard perpendicular by the maſt.

PITCHING. The movement of a ſhip, by which ſhe plunges her head and after-part alternately into the hollow of the ſea.

To PLY TO WINDWARD. To endeavour to make a progreſs againſt the direction of the wind. See BEATING TO WINDWARD.

POINT-BLANK. The direction of a gun when levelled horizontally.

POOPING. The ſhock of a high and heavy ſea upon the ſtern or quarter of a ſhip, when ſhe ſcuds before the wind in a tempeſt.

PORT. A name given on ſome occaſions to the larboard ſide of the ſhip; as, the ſhip heels to port, top the yards to port, &c.

PORT THE HELM. The order to put the helm over to the larboard ſide.

PORT-LAST. The gunwale.

PORTOISE. The ſame as PORT-LAST; TO RIDE A PORTOISE is to ride with a yard ſtruck down to the deck.

PRESS OF SAIL. All the ſail a ſhip can ſet or carry.

PRIZING. The application of a lever to move any weighty body.

PURCHASE. Any ſort of mechanical power employed in raiſing or removing heavy bodies.

QUARTERS. The ſeveral ſtations of a ſhip's crew in time of action.

QUARTERING. When a ſhip under ſail has the wind blowing on her quarter.

To RAISE. To elevate any diſtant object at ſea by approaching it; thus, TO RAISE THE LAND is uſed in oppoſition to LAY THE LAND.

To RAKE. To cannonade a ſhip at the ſtern or head, ſo that the balls ſcour the whole length of the decks.

RANGE. A ſufficient length of cable drawn upon deck before the anchor is caſt looſe, to admit of its ſinking to the bottom, without any check.

REACH. The diſtance between any two points on the banks of a river, wherein the current flows in an uninterrupted courſe.

READY ABOUT! A command of the boatſwain to the crew, and implies that all the hands are to be attentive, and at their ſtations for tacking.

REAR. The laſt diviſion of a ſquadron, or the laſt ſquadron of a fleet. It is applied likewiſe to the laſt ſhip of a line, ſquadron, or diviſion.

REEF. Part of a ſail from one row of eyelet-holes to another. It is applied likewiſe to a chain of rocks lying near the ſurface of the water.

REEFING. The operation of reducing a ſail, by taking in one or more of the reefs.

To REEVE. To paſs the end of a rope through any hole, as the channel of a block, the cavity of a thimble, &c.

RENDERING. The giving way or yielding to the efforts of ſome mechanical power. It is uſed in oppoſition to jambing or ſticking.

RIDING, when expreſſed of a ſhip, is the ſtate of being retained in a particular ſtation, by an anchor and cable: thus ſhe is ſaid to RIDE EASY or to RIDE HARD, in proportion to the ſtrain upon her cable. She is likewiſe ſaid to RIDE LEEWARD TIDE, if anchored in a place at a time when the tide ſets to leeward; and to RIDE WINDWARD TIDE, if the tide ſets to windward: to RIDE BETWEEN

WIND AND TIDE, when the wind and tide are in direct oppoſition, cauſing her to ride without any ſtrain upon her cables.

RIGHTING. Reſtoring a ſhip to an upright poſition, either after ſhe has been laid on a careen, or after ſhe has been preſſed down on her ſide by the wind.

To RIGHT THE HELM is to bring it into midſhips, after it has been puſhed either to ſtarboard or larboard.

RIGGING OUT A BOOM. The running out a pole at the end of a yard, to extend the foot of a ſail.

To RIG THE CAPSTERN. To fix the bars in their reſpective holes.

ROLLING. The motion by which a ſhip rocks from ſide to ſide like a cradle.

ROUGH-TREE. A name applied to any maſt, yard, or boom, placed in merchant ſhips, as a rail or fence above the veſſel's ſide, from the quarter-deck to the forecaſtle.

ROUNDING-IN. The pulling upon any rope which paſſes through one or more blocks in a direction nearly horizontal; as, ROUND-IN the weather braces.

ROUND-TURN. The ſituation of the two cables of a ſhip when moored, after they have been ſeveral times croſſed by the ſwinging of the ſhip.

ROUNDING-UP. Similar to ROUNDING-IN, except that it is applied to ropes and blocks which act in a perpendicular direction.

To ROW. To move a boat with oars.

ROWSING. Pulling upon a cable or rope, without the aſſiſtance of tackles.

To RUN OUT A WARP. To carry the end of a rope out from a ſhip, in a boat, and faſtening it to ſome diſtant object; ſo that by it the ſhip may be removed by pulling on it.

To SAG TO LEEWARD. To make conſiderable lee-way.

SAILING-TRIM is expreſſed of a ſhip when in the beſt ſtate for ſailing.

SCANTING. The variation of the wind, by which it becomes unfavourable to a ſhip's making great progreſs, as it deviates from being large, and obliges the veſſel to ſteer cloſe-hauled or nearly ſo.

SCUDDING. The movement by which a ſhip is carried precipitately before the wind in a tempeſt.

SCUTTLING. Cutting large holes through the bottom or ſides of a ſhip, either to ſink her, or to unlade her expeditiouſly when ſtranded.

SEA. A large wave is ſo called; thus they ſay, a HEAVY SEA. It implies, likewiſe, the agitation of the ocean, as, a GREAT SEA. It expreſſes the direction of the waves, as, a HEAD-SEA. A LONG SEA means an uniform and ſteady motion of long and extenſive waves; a SHORT SEA, on the contrary, is when they run irregularly, broken and interrupted.

SEA-BOAT. A veſſel that bears the ſea firmly, without ſtraining her maſts, &c.

SEA-CLOTHS. Jackets, trowſers, &c.

SEA-MARK. A point or object on ſhore conſpicuouſly ſeen at ſea.

SEA-ROOM. A ſufficient diſtance from the coaſt or any dangerous rocks, &c. ſo that a ſhip may drive or ſend, without danger of ſhipwreck.

SENDING. The act of pitching precipitately into the hollow between two waves.

SETTING. The act of obſerving the ſituation of any diſtant object by the compaſs.

To SET SAIL. To unfurl and expand the ſails to the wind, in order to give motion to the ſhip.

To SET UP. To increaſe the tenſion of the ſhrouds, backſtays, &c. by tackles, laniards, &c.

To SETTLE THE LAND. To lower in appearance. It is ſynonimous with TO LAY THE LAND.

To SHAPE A COURSE. To direct or appoint the track of a ſhip, in order to proſecute a voyage.

SHEERING. The act of deviating from the line of the courſe, either to the right or left.

To SHEER OFF. To remove to a greater diſtance.

To SHEET-HOME. To haul the ſheets of a ſail home to the block on the yard-arm.

To SHIFT THE HELM. To alter its poſition from right to left, or from left to right.

To SHIP. To take any perſon, goods, or thing on-board. It alſo implies to fix any thing in its proper place; as, to SHIP THE OARS, to fix them in their rowlocks.

SHIVERING. The ſtate of a ſail, when fluttering in the wind.

SHOAL. Shallow.

To SHOE THE ANCHOR. To cover the flukes with a piece of plank, to give it firmer hold in ſoft ground.

To SHOOT A-HEAD. To advance forward.

SHORE. A general name for the ſea coaſt of any country.

To SHORTEN SAIL. Uſed in oppoſition to MAKE SAIL.

SLACK-WATER. The interval between the flux and reflux of the tide, when no motion is perceptible in the water.

SLATCH is applied to the period of a tranſitory breeze.

To SLIP THE CABLE. To let it run quite out, when there is not time to weigh the anchor.

To SLUE. To turn any cylindrical piece of timber about its axis, without removing it. Thus, to SLUE A MAST or BOOM is to turn it in its cap or boom-iron.

SOUNDING. Trying the depth of the water with a plummet, ſunk from a ſhip to the bottom.

To SPELL THE MIZEN. To let go the ſheet, and peek it up.

To SPILL. To diſcharge the wind out of the cavity or belly of a ſail, when it is drawn up in the brails, in order to furl or reef it.

SPLIT. The ſtate of a ſail rent by the violence of the wind.

SPOON-DRIFT. A ſort of ſhowery ſprinkling of the ſea-water, ſwept from the ſurface of the waves in a tempeſt, and flying like a vapour before the wind.

SPRAY. The ſprinkling of the ſea, driven occaſionally from the top of a wave, and not continual as SPOON-DRIFT.

To SPRING A MAST, YARD, &c. To crack a maſt, yard, &c. by means of ſtraining in blowing weather, ſo that it is rendered unſafe for uſe.

To SPRING A LEAK. When a leak firſt commences, a ſhip is ſaid to SPRING A LEAK.

To SPRING THE LUFF. A ſhip is ſaid to SPRING HER LUFF, when ſhe yields to the effort of the helm, by ſailing nearer to the wind than before.

SQUALL. A ſudden violent blaſt of wind.

SQUARE. This term is applied to yards that are very long; as TAUNT is to high maſts.

To SQUARE THE YARDS. To brace the yards, ſo as to hang at right angles with the keel.

To STAND ON. To continue advancing.

To STAND IN. To advance towards the ſhore.

To STAND OFF. To recede from the ſhore.

STARBOARD. The right-hand ſide of the ſhip, when looking forward.

STARBOARD-TACK. A ſhip is ſaid to be on the STARBOARD-TACK, when ſailing with the wind blowing upon her ſtarboard-ſide.

STARBOARD THE HELM! An order to puſh the helm to the ſtarboard-ſide.

To STAY A SHIP. To arrange the ſails, and move the rudder, ſo as to bring the ſhip's head to the direction of the wind, in order to get her on the other tack.

STEADY! The order to the helmſman, to keep the ſhip in the direction ſhe is going at that inſtant.

STEERING. The art of directing the ſhip's way by the movement of the helm.

STEERAGE-WAY. Such degree of progreſſive motion of a ſhip, as will give effect to the motions of the helm.

To STEM THE TIDE. When a ſhip is ſailing again the tide at ſuch a rate as enables her to overcome its power, ſhe is ſaid to STEM THE TIDE.

STERNFAST. A rope confining a ſhip by her ſtern to any other ſhip or wharf.

STERNMOST. The furtheſt a-ſtern, oppoſed to HEADMOST.

STERNWAY. The motion by which a ſhip falls back with her ſtern foremoſt.

STIFF. The condition of a ſhip when ſhe will carry a great quantity of ſail without hazard of overſetting.

To STOW. To arrange and diſpoſe a ſhip's cargo.

To STREAM THE BUOY. To let it fall from the ſhip's ſide into the water.

To STRIKE. To lower or let down any thing. Uſed emphatically to denote the lowering of colours in token of ſurrender to a victorious enemy.

To STRIKE SOUNDING. To touch ground, when endeavouring to find the depth of water.

SURF. The ſwell of the ſea that breaks upon ſhore or on any rock.

To SURGE THE CAPSTERN. To ſlacken the rope heaved round upon it.

SWELL. The fluctuating motion of the ſea either during or after a ſtorm.

SWEEPING. The act of dragging the bight or looſe part of a rope along the ſurface of the ground, in a harbour or road, in order to drag up ſomething loſt.

SWINGING. The act of a ſhip's turning round her anchor at the change of wind or tide.

To TACK. To turn a ſhip about from one tack to the other.

TAKING-IN. The act of furling the ſails. Uſed in oppoſition to SETTING.

TAKEN A-BACK. See A-BACK.

TAUGHT. Improperly though very generally uſed for TIGHT.

TAUNT. High or tall. Particularly applied to maſts of extraordinary length.

TENDING. The turning or ſwinging of a ſhip round her anchor in a tide-way, at the beginning of ebb and flood.

THWART. See A-THWART.

THWART SHIPS. See A-THWART-SHIPS.

THUS! An order to the helmſman to keep the ſhip in her preſent ſituation, when ſailing with a ſcant wind.

TIDE-WAY. That part of river in which the tide ebbs and flows ſtrongly.

TIER. One range of any thing placed horizontally.

TOPPING. Pulling one of the ends of a yard higher than the other.

To TOW. To draw a ſhip in the water, by a rope fixed to a boat or other ſhip, which is rowing or ſailing on.

TRIM. The ſtate or diſpoſition by which a ſhip is beſt calculated for the purpoſes of navigation.

To TRIM THE HOLD. To arrange the cargo regularly.

To TRIM THE SAILS. To diſpoſe the ſails in the beſt arrangement for the courſe which a ſhip is ſteering.

To TRIP THE ANCHOR. To looſen the anchor from the ground, either by deſign or accident.

TROUGH OF THE SEA. The hollow between two waves.

TRYING. The ſituation in which a ſhip, in a tempeſt, lies-to in the trough or hollow of the ſea, particularly when the wind blows contrary to her courſe.

TURNING TO WINDWARD. That operation in ſailing, whereby a ſhip endeavours to advance againſt the wind.

VAN. The foremoſt diviſion of a fleet in one line. It is likewiſe applied to the foremoſt ſhip of a diviſion.

To VEER. To change a ſhip's courſe, from one tack to the other, by turning her ſtern to windward. The wind is ſaid to veer when it changes more aft.

To VEER AND HAUL. To pull a rope tight, by alternately drawing it in and ſlackening it.

To UNBALLAST. To diſcharge the ballaſt out of a ſhip.

To UNBEND. To take the ſails off from their yards and ſtays. To caſt looſe the anchor from the cable. To untye two ropes.

To UNBIT. To remove the turns of a cable from off the bits.

UNDER FOOT. Is expreſſed of an anchor that is directly under the ſhip.

UNDER SAIL. When a ſhip is looſened from moorings, and is under the government of her ſails and rudder.

UNDER-WAY. The ſame as UNDER-SAIL.

UNDER THE LEE OF THE SHORE is to be cloſe under the ſhore which lies to windward of the ſhip.

To UNMOOR. To reduce a ſhip to the ſtate of riding at ſingle anchor, after ſhe has been moored.

To UNREEVE. To draw a rope from out of a block, thimble, &c.

To UNRIG. To deprive a ſhip of her rigging.

WAKE. The print or track impreſſed upon the ſurface of the water by a ſhip in her courſe, A ſhip is ſaid to be IN THE WAKE of another, when ſhe follows her in the ſame track, or on a line ſuppoſed to be formed on a continuation of her keel.

To WARE. See TO VEER.

WARP. A ſmall rope employed occaſionally to remove a ſhip from one place to another.

To WARP. To remove a ſhip by means of a warp.

WATER-BORNE. The ſtate of a ſhip, when there is barely a ſufficient depth of water to float her off from the ground.

WATER-LOGGED. The ſtate of a ſhip, become heavy and inactive on the ſea, from the great quantity of water leaked into her.

WATER-TIGHT. The ſtate of a ſhip, when not leaky.

WEATHER. Synonimous with WINDWARD.

WEATHER-BEATEN. Shattered by a ſtorm.

WEATHER-BIT. A turn of the cable about the end of the windlaſs.

WEATHER-GAGE. When a ſhip or fleet is to windward of another ſhe is ſaid to have the WEATHER-GAGE of her.

WEATHER-QUARTER. That quarter of the ſhip which is on the windward ſide.

WEATHER-SIDE. The ſide upon which the wind blows.

To WEIGH ANCHOR. To heave up an anchor from the bottom.

To WIND A SHIP. To change her poſition, bringing her head where her ſtern was.

WIND-ROAD. When a ſhip is at anchor, and the wind, being againſt the tide, is ſo ſtrong as to overcome its power and keep the ſhip to leeward of her anchor, ſhe is ſaid to be WIND-ROAD.

WIND's-EYE. The point from which the wind blows.

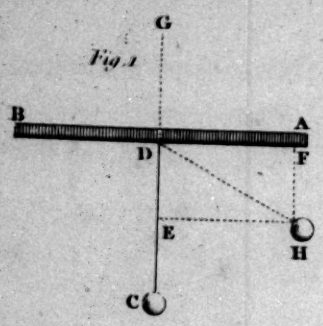
To WINDWARD. Towards that part of the horizon from which the wind blows.

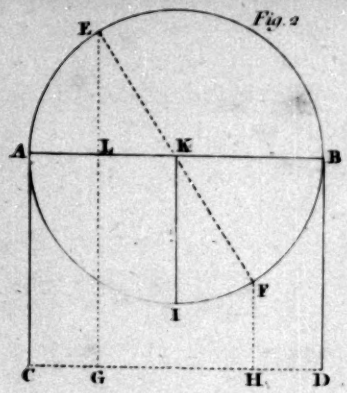
WINDWARD-TIDE. A tide that ſets to windward.

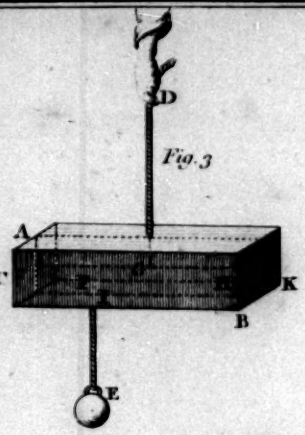
To WORK A SHIP. To direct the movements of a ſhip, by adapting the ſails and managing the rudder according to the courſe the ſhip has to make.

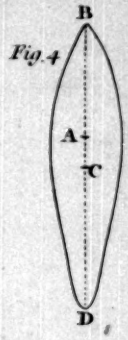
To WORK TO WINDWARD. To make a progreſs againſt the direction of the wind.

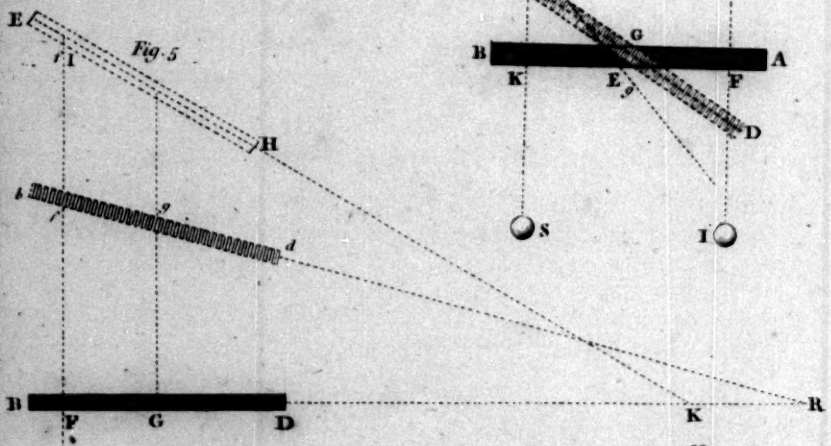
YAWING. The motion of a ſhip, when ſhe deviates from her courſe to the right or left.

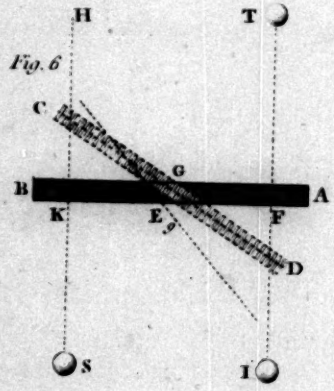


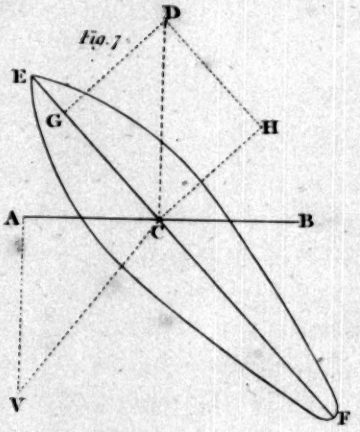


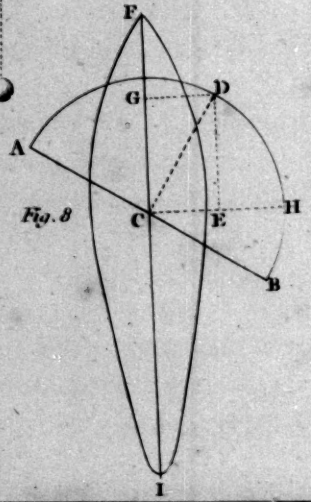


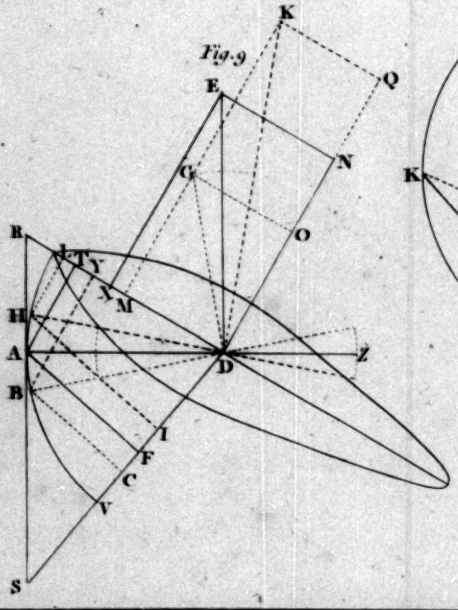


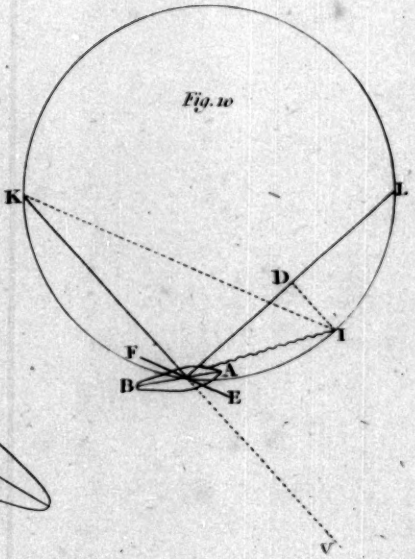












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THE THEORY OF WORKING SHIPS.

THE theory of working ſhips is nothing but the demonſtration, ſupported with proofs, of the effects of every ſail, and of the rudder, ſeparately or all together conſidered, both with reſpect to the points where theſe machines are placed in the ſhip, and with reſpect to the different diſpoſitions which either are given them in the changes of evolutions, or which ariſe from their various obliquities, when they preſent, more or leſs obliquely, their ſurfaces to the courſe of the water or the wind.

LEMMA.

I. IF A BODY STRIKES A SURFACE, IT COMMUNICATES TO IT ALL ITS PERPENDICULAR MOTION.

DEMONSTRATION.

If the body C, (fig. I.) meets the ſurface A B, with a motion perpendicular to its middle, or center of gravity D, it will do it with the ſtrength of all its perpendicular motion, which is the produce of its weight by its velocity; and will force it in the direction D G, perpendicular to A B. If the ſame body meets the ſame ſurface obliquely, and with the ſame velocity, it will impel it in the direction D G, with the velocity only of D E, which is equal to the angle of incidence H F. For, H F expreſſes the perpendicular velocity of the body H, towards the ſurface: and this is evident, if we conſider that the movement H D, is compoſed of the two movements H F, and H E; and that there is no other movement, but H F only, which can meet the ſurface A B, ſince the other H E, is parallel to it.

But the part H F, of the motion of the body H, is perpendicular to the ſurface A B: whence it follows, that the body H impels, in the like perpendicular manner, that ſurface in the direction D G, with a force equal to the product of its weight by the velocity H F.

CHAPTER I.

OF THE ACTION WHICH WATER OR WIND HAVE, BY THEIR PRESSURE, ON SURFACES.

2. FLUIDS are formed of an infinite number of particles, the minuteneſs of which is the cauſe why they communicate, by their ſhock, but very imperceptible degrees of motion, in the firſt inſtant of their action: and ſuch is the weakneſs of their action, that it requires to be repeated a great many times before they can produce any ſenſible effect on the bodies they are to move.

It is eaſy to conceive, that the more ſpecific gravity a body is poſſeſſed of, the ſtronger its impulſe muſt be: therefore water, which weighs nearly eight hundred and fifty times more than air, ought to produce (the velocity being the ſame) an impulſion eight hundred and fifty times more than air would againſt a ſurface of the ſame ſize, moved in directions perfectly ſimilar. And when it is known that the impulſe of a fluid depends on its ſpecific gravity, it will be eaſily underſtood that ſuch an impulſe muſt depend alſo on the extent of the ſurface which is ſtruck. For, it is plain that the greater the ſurface is (the gravity, the velocity, and the direction of the fluid being the ſame), the ſtronger the impulſe will be, admitting ſtill the ſame proportion to be kept between the extent of that fluid's ſurface and that of any other ſurface put in compariſon with it; becauſe a ſurface of twelve feet ſquare will always receive twelve times as much impulſion as would a ſurface of only one foot ſquare. We muſt obſerve here, at the ſame time, that ſuch parts of the fluid as ſtrike, find more or leſs difficulty to recoil after the ſhock, according as the ſurface is more or leſs extenſive; becauſe, the greater the ſurface ſtruck, the longer is the continuance of repulſion from their former directions impreſſed on the particles, which, by that very act of repulſion, receive a new direction, by which they are made to loſe for a while the firſt movement they had during their primitive ones; whence it follows, that the ſhock of the ſubſequent particles muſt be altered; but this deviation, from the direct line, of the ſubſequent particles may be looked upon as almoſt nothing; ſince there is very little wanting, indeed, but all impulſions ſhould be in the reciprocal proportions which exiſt between them and the ſurfaces on which they ſtrike; allowing always all other circumſtances to be alike.

3. It muſt be obſerved, that the rapidity of the fluid contributes doubly to the force of the impulſe; for every particle ſtrikes with ſo much the more ſtrength as it acts with a greater velocity, and is at the ſame time followed by a greater number of new particles to ſhock the ſurface. So that the greater the celerity of the particles, the greater is the number of thoſe which ſhare the action, and the more powerful is the reſiſtance they oppoſe to their being put out of their direct motion. But, if the fluid is poſſeſſed of five or ſix times more rapidity, it is evident that every particle enjoys likewiſe five or ſix times more force to ſhock the ſurface which oppoſes the paſſage of them all together; as, on the ſide of the ſurface, there are five or ſix times as many particles to encounter in the ſame ſpace of time: therefore ſuch a ſurface, thus expoſed to the ſhock of the fluid, will be ſtruck with twenty-five or thirty-ſix times more force at one time than at another, ſince there are five or ſix times as many particles employed in the act of ſtriking, and ſupported with five or ſix times as much ra-

pidity. Whence it may be concluded, that impulſions increaſe as the ſquares of velocities; or, rather that they are between themſelves as the ſquares of their velocities, when all other circumſtances are the ſame.

OBSERVATIONS.

When a ſurface is expoſed to the courſe of a fluid, it is indifferent whether we conſider that the fluid ſhocks the ſurface, or that the ſurface moves the fluid: or, again, whether we conſider the fluid and the ſurface as having each their reſpective ſhare of the velocity with which that ſurface receives the impulſe of the fluid.

4. When the wind has little velocity, its action is obſerved to be but faint; but, when moving with rapidity, then it becomes capable of producing the greateſt effects. This is eaſy to be conceived; for, if to the action of every particle of air, which is ſtronger by reaſon of its increaſed celerity, be added a greater number of particles ſtriking at the ſame time, it is evident that its force will increaſe as the ſquare of its velocity; which has already been demonſtrated.

The ſame may be ſaid of water, the impulſe of which is almoſt like that of a ſolid when it acts, or is acted upon, with a great rapidity of motion. Whence we muſt conclude, that if that water meets perpendicularly a body which preſents to it a great ſuperficies, ſuch a body muſt have the greateſt ſolidity to be able to reſiſt it.

5. Experience confirms this principle. For, a ſhip which drives to leeward does not divide the fluid with her ſide in a direct line; there is always ſome obliquity in the direction ſhe purſues by her act of dividing. This obliquity proceeds from the little reſiſtance ſhe experiences from the fluid either at her ſtem or at her ſtern. So that, ſhould ſhe be driven ever ſo little to leeward, ſhe glides always obliquely on the column of water which oppoſes her under her lee, in following a line more or leſs cloſe to the direction of her length, than to the perpendicular which may be conceived to be drawn as lateral to her keel.

6. We have hitherto ſpoken of the impulſe of fluids upon ſurfaces only, when conſidered as perpendicular: but, when that impulſe becomes oblique, it is clear, that it muſt receive a great deal of diminution; ſince the motion of every particle will be diſcompoſed on account of its acting only by its motion perpendicular to the ſurface, as has been demonſtrated (*fig.* 1.), where the body H, may be conſidered as a particle of a fluid, the impulſe of which is proportionably leſs as the ſine of the angle of incidence H D F, is diminiſhed: therefore, in this caſe, when we conſider the particle H, as a body, its impulſe will be in the proportion of the different angles of incidence, which always expreſs the reſpective velocities, theſe being conſidered in a direction perpendicular to the ſurface.

7. If, inſtead of one particle, we conſider the whole ſurface as expoſed to the courſe of all thoſe which compoſe a fluid; it will appear evident, from what has been ſaid, that the ſurface E F, (*fig.* 2.) which is oblique to the courſe of the fluid, preſents to that fluid, a leſs ſurface than it would if it were perpendicular to it, like A B. So that each particle produces a leſs ſhock, and the particles which are at the ſame time contributing to the ſhock, are leſs in number. Now, as theſe two cauſes of diminution follow the ſame proportion, it reſults, that the impulſions of fluids are between themſelves as the ſquares of the ſines of incidence. Therefore, as ſoon as the impulſe of a fluid, which ſtrikes a ſurface perpendicularly, is known; that impulſe, when it ſtrikes the ſurface obliquely, is only to be diminiſhed in the ſame proportion as the ſine total I K, is to the ſquare of the ſine of incidence L K.

The ſurface A B (*fig.* 2.) receives all the direct impulſe of the fluid which ſtrikes it perpendicularly, and which is contained between C D: but, the ſame ſurface, preſented obliquely to the fluid in the direction E F, will receive but a part of the impulſe, which will be proportional to the ſine of incidence K L, compared with the ſine total I K, of the direct effort of every particle contained between the parallels E G, and F H, which incloſe a much leſs ſpace than the firſt, A C, and B D. Whence it is eaſy to conclude, that the diminution of the impulſe of the fluid has diminiſhed on two ſides, and has conſequently followed the proportion of the ſquare of the ſine total I K, to the ſquare of the ſine of incidence L K; for, there is a leſs number of particles employed in ſtriking the ſurface, and with a ſmaller degree of velocity.

8. It follows, that we ought not to be ſurpriſed to ſee the velocity of a ſhip diminiſhing conſiderably when, after having run with the wind aft or large, the veſſel is hauled cloſer to the wind. For, it is evident that all the ſails which can poſſibly be ſpread in this laſt direction will receive but very little impulſe, on account of their great obliquity to the wind, with which they cannot make an angle more open than 30 degrees, and ſometimes much leſs, as will be demonſtrated hereafter. So that the impulſe has diminiſhed, in proportion as the ſquare of the ſine total is to the ſine of incidence of 30 degrees; that is is to ſay, as 4 to 1. Therefore, the ſails, receiving but a very faint impulſe, can communicate to the ſhip but a ſmall motion; and that motion is ſtill enfeebled by the reſiſtance of the water on the lee-bow; which reſiſtance increaſes, on one hand, by the inclination of the ſhip, and, on the other, by the greater ſurface which ſhe preſents to the water in the direction of her length; to which muſt be added, the decompoſition of the abſolute effort of the ſails, the lateral part of which is now become much greater than the direct. Hence we find the rapidity of the ſhip's way is already diminiſhed from three evident cauſes; to which another may ſtill be added; and it is this: if the ſhip has an inclination to the horizon (as this always happens in oblique courſes, and as we have already hinted,) and if the wind has ever ſo little force, there will reſult again, from that circumſtance, a cauſe of diminution of impulſe of the wind on the ſails; becauſe, in ſuch a caſe, the ſails follow that particular inclination of the ſhip called *heeling:* and this diminution of impulſe will follow this particular proportion, viz. that in ſuch a direction the ſquare of the ſine of incidence will be ſmaller than that of the ſine total. Therefore, we ſee that the abſolute ſine of incidence diminiſhes in a twofold proportion, and receives that diminution from the compound ratio of the proportion which the ſine total bears to the two ſines of the obliquity of the yard with the wind, and of the inclination of the ſail with the wind.

9. The impulſe of the wind being continual, muſt neceſſarily communicate to the ſhip, degrees of velocity which, from inſtant to inſtant, are increaſing, until there happens to be an equilibrium between the impulſe of the wind on the ſails and the reſiſtance of the water on the bows, obſerving, that, in the courſes where the ſhip ſails with the wind abaft the beam, the firſt moment when the wind ſtrikes the ſails is the time when its impulſe is greateſt, and the reſiſtance of the water the weakeſt; becauſe, at that inſtant, the ſhip does not yet move in the fluid, not having yielded to the power of the wind: but, in a few moments, the velocity of the ſhip increaſing, the reſiſtance of the water on the bows increaſes alſo conſiderably: then the impulſe of the wind on the ſails is proportionably decreaſing; becauſe the ſhip receding, as it were, from the wind, muſt of courſe leſſen its power on the ſails. Thus the accelerating force is inceſſantly leſſening from two cauſes; firſt, from the wind ſtriking the ſails with leſs force; and, ſecond, from the greater part of its impulſe being deſtroyed by the reſiſtance of the water on the bows: a reſiſtance which increaſes in proportion as the ſhip's way accelerates; for this oppoſition of the water is as a deduction from the effort of the wind;

ſince, by its reſiſtance, the water renders part of that effort ineffectual. Therefore, the rate of ſailing will be the greateſt poſſible when the impulſe of the wind upon the ſails ſhall be ſo diminiſhed, and the reſiſtance of the water on the bows ſo increaſed, as that the two forces acting in contrary directions are in a perfect equilibrium. Hence we muſt conclude, that the veſſel will now enjoy a conſtant and uniform motion; for, the ſhip advances as if ſhe were not ſubject to the action of any exterior force, the wind no longer having power to increaſe her velocity, becauſe the reſiſtance of the water on her bows prevents it; and, on the other hand, the impulſe of the wind hinders the water, by its reſiſtance, from retarding her courſe.

10. If a ſhip runs on a line perpendicular to the direction of the wind, the impulſe on the ſails is always the ſame, becauſe ſhe does not recede from the point from which the wind blows: but, when ſhe ſails cloſe hauled, the impulſe muſt be ſtronger; becauſe ſhe runs to windward, and draws nearer to that point. So that if the rate of the ſhip's ſailing be great, the apparent angle of incidence diminiſhes in proportion to the two velocities, viz. that of the wind, and that of the ſhip.

The moment a ſurface which is ſuſpended, or afloat, is ſtruck by a fluid, that is the time of the greateſt impulſion (if it were not in motion before,) and of the greateſt reſiſtance of the ſurface.

CHAPTER II.

OF THE CENTER OF GRAVITY.

11. EVERY ſolid has a center of gravity; that is to ſay, a point on which, it being ſuſpended, it will have a perfect equilibrium; and on that point all the gravity of the body is united. Such, for example, is the rectangular parallelepipedon A B, (fig. 3.) the center of gravity of which is exactly in the middle of the ſolid, G; ſo that, if it be ſuſpended from that point, as from G, to D, it will always be in equilibrium; becauſe that ſolid being conſidered as regular, one of its halves muſt exactly balance the other; and were it not regular, the finding of this center would be much more complicated. Without engaging, therefore, in abſtract difficulties, it will be ſufficient, for our purpoſe, to make it appear that the center of gravity of a body heavier at one extremity than at the other, lies always in the heavieſt part, with reſpect to the point which marks the middle of the length of the body. If to the ſolid A B, which is ſuſpended in a perfect equilibrium by its center of gravity G, be added a weight E, in the center of the part A G, the equilibrium will then be loſt, as it will increaſe the weight of this part, which will then overweigh the other half B G, by all the weight E, of which the part B G, becomes by ſo much lighter. To find, then, the centre of gravity, which is changed from G, to I, we muſt divide reciprocally to the weight of the two bodies, A G + E for the one, and B G, for the other, the interval F H; for it may be ſuppoſed that this half A G, of the parallelepipedon *plus* the weight E, is a body ſuſpended by the center F, of the part A G; and that this point is the extremity of a lever F H, infinitely light, which bears alſo, at the other extremity H, taken for the center of the other part B G, all the weight of that part: ſo that, if the body A G + E, weighs four times as much as the other weight B G, we have but to make the interval F I, the fourth part of the other I H, and the point I, will then be the center of gravity required of the ſolid A B + E, and the two bodies ſuſpended by that point will be in perfect equilibrium; for the weight A G E, + is four times as heavy as the other B G; but it acts with an arm of a lever

F I, which is only the fourth part of the other I H; therefore the two weights ſuſpended by the point I, will preſerve a perfect equilibrium, in whatever ſituation they may be placed, as they make, in fact, both but one, the heavineſs of which may be ſuppoſed united in the ſingle point I.

12 It follows, from what has been demonſtrated, that a long lever is productive of a greater effect than a ſhort one, when both are actuated by the ſame force; whence we muſt conclude, that the longeſt lever, or the greateſt diſtance from the *fulcrum* or point of ſupport, is proportional to the greateſt weight.

It is very eaſy to be convinced of this truth, if we make one of the two following proportions: firſt, thus; the ſum of the two weights A G + E + B G : F H : : B G : F I; or : : A G + E : I H.

We have ſuppoſed that the weight A G + E (*fig.* 3.) weighs four times as much as the other B G, which I ſuppoſe to be two pounds; ſo that the ſum total will be ten pounds. Then ſay: Ten, the ſum of the two weights, is to the whole lever F H, as two pounds is to the leſs part, F I, of the lever divided into five equal parts: ſo that, if F I, is equal to two feet, I H, will be equal to eight feet, and F H, equal to ten feet. But we have alſo this proportion to make; viz. Ten pounds, the ſum of the two weights, is to ten feet, the whole length of the lever, as eight pounds are to eight feet; but, admitting the diſtance F H, to be ten feet, the diſtance F I is found to be two feet, and that of H I eight feet; which demonſtrates, that a power of two pounds on a lever of eight feet, is equal to a power of eight pounds on a lever of two feet; for the product of the extremes, in both the one and the other proportions, is equal to that of their means.

It ought alſo to be obſerved, that the center of gravity of a ſolid follows always the greateſt weight with reſpect to the middle G, (*fig.* 3.) ſince the point I, is four times as near the center F, of the heavieſt body as it is to the center H, of the lighteſt body.

13. It follows, that the center of gravity A, of a ſhip (*fig.* 4.) is always before the point C, which is the middle of her abſolute length; for, the fore part B C having more capacity than the after part C D, muſt of courſe have alſo more weight: therefore, it carries the center of gravity C, forward, in proportion to its greater weight (which in large ſhips is from fifty to eighty tons,) and to the interval there is between every center of gravity of each particular part, both forward and aft.

14. When a ſhip is at ſea, and loaded, the center of gravity may well be ſuppoſed not to change, unleſs the cargo be moved.

But it muſt be obſerved, that, as experience ſhows it, the fore or after part of the bottom of a ſhip plunges and labours more and more, in proportion as the wind acts with more or leſs force on the ſails; becauſe ſhips are generally not maſted according to the *point velique:* * ſo that a ſhip which has the center of the effort of her ſails ill-placed, draws always more water forward, or aft, when the impulſe of the wind upon her ſails is very powerful, than when ſhe is at eaſe under her burthen.

* From the center of gravity of the floating line of a ſhip let a perpendicular be raiſed, and continued till interſected by the direction of the impulſe of the water on the bows, in ſailing directly before the wind; and where theſe two lines cut each other, there is the *point velique*, and where the center of effort of all the ſails ſhould be placed.

THEOREM.

15. The center of rotation, or the point on which a body turns freely, is always on the other ſide of the center of gravity of that body, with reſpect to the point on which the moving force acts.

DEMONSTRATION.

IF the body B D, (*fig.* 5.) be ſtruck in its center of gravity G, when it is perfectly at reſt, it is evident (§ 1.) that the two extremities, B and D, will advance equally on parallels: but, if it is ſtruck in the point F, diſtant from the center of gravity, by any mobile ſuch as A, when the body is ſubject to no friction, it will then have two motions with reſpect to its center of gravity G, on which are collected all the weight and the reſiſtance. For, that center, not being held by any thing, is moved in the direction G *g*, parallel to the direction A I, of the effort of the mobile A, which ſtrikes the body B D, in the point F. So that the part B G, of that body receives the ſhock of the mobile A, which makes it paſs from F to *f*, according to the direction of its motion A I. And as the other part, G D, of the ſame body ſhares that motion only in proportion as its parts are leſs diſtant from the point of percuſſion, F, (ſince the neareſt parts of that point receive the greater ſhare of the action,) in proportion as they remove from their firſt ſituation, they all deſcribe, by the firſt effect of the ſhock, parallels B *b*, G *g*, and D *d*, to the direction A I, of the effort of the mobile A. Theſe parallels are greater as they are more diſtant from the part ſhocked, and from its extremity B; becauſe the reſiſtance which the body B D makes againſt receiving the motion, cannot be in equilibrium with that which the power A, makes to loſe part of its own motion, but as much as the two reſiſtances are equal and directly contrary: therefore, the body B D, yielding to the impulſe of the moible A, does not oppoſe to it a reſiſtance, equal to its ſhock; it muſt then change its place and ſituation, in turning on the point R, marked by the meeting of two lines D R, and *d* R, drawn from the center of gravity of the body B D, in thoſe two ſituations, before and after the ſhock; and as the circular motion of the body B D, is made always round the center of gravity, it is eaſy to conceive that the center, having taken the velocity G *g*, muſt continue to move equally in the ſame right line prolonged; and that the body having begun to turn, it muſt continue to do the ſame round its center of gravity, and at the ſame time, be carried in the direction A I, on the parallels B E, and D H, as long as the force which puts it in motion exiſts. But, it muſt be remarked that, in proportion as it ſhall remove from its firſt ſituation B D, it will loſe all the relations it had, in the principle of motion, with the point R; that is to ſay, that the point G, being tranſported to *g*, in the firſt inſtant of the ſhock, it will continue in the ſecond and the following inſtants to be thus tranſported on the ſame line and in the ſame direction: therefore, the point of rotation R, will change in proportion as the body B D, removes from the ſecond ſituation *b d*, to take another E H; for the line H K, will cut D R, in a point K, nearer the point from which the body was moved; and although the point of rotation R, be continually changing during the time of motion, it remains always on the other ſide of the center of gravity, with reſpect to the point of percuſſion, till at laſt the body B D, be ſo much turned, that the effort A I, may paſs through the center of gravity G, in the direction D B; then the body D B, will ceaſe to turn round a point ſituated on the part G D, prolonged, and will turn ſucceſſively on different points of the part G B, which will then have paſſed to the oppoſite ſide.

REMARKS.

16. IF the force of the mobile A, (*fig.* 5.) employed to turn the body B D, be greater or leſs, the velocity G *g*, of the center of gravity will be likewiſe increaſed or diminiſhed in proportion as the mobile ſhall act with more or leſs power. Conſequently, when the body B D, changes its ſituation, the angle it will make with its firſt poſition will be proportional to the motion G *g*, or to the force employed in the ſhock, ſince they are correſpondent to one another. Therefore, all other circumſtances being the ſame, the rapidity of the circular motion will be always in proportion to the force employed to produce it.

17. A method of increaſing the rapidity of motion, and the angle of rotation, is to make the power A, (*fig.* 5.) act on a point more diſtant from the center of gravity G, than the given point F; for, it is clear, that if the diſtance G F be two or three times augmented, the other diſtance G R, from the center of gravity to the point of rotation, will become two or three times leſs; and the ſides of the angle G R *g*, becoming conſequently ſhorter, it follows, that the angle will be more open in the ſame proportion. Therefore, it is demonſtrated that there are two ſure methods of augmenting both the angle and motion of rotation of a body: the firſt conſiſts of employing more force in the percuſſion, in order that the angle G R *g* ſhould be as much increaſed as is the ſide G *g*, which ſubtends it.

The ſecond is, to apply that force at a greater diſtance from the center of gravity of the body you wiſh to turn: for, in augmenting F G, G R is diminiſhed; and the more the ſides which form an angle are ſhortened (the ſide which ſubtends it ſtill remaining the ſame), the more the angle is augmented. So that the angle of rotation is in a compound proportion both to the force employed, and to the diſtance of that force from the center of gravity: this angle is then, as the produce of that force multiplied by F G. Although the body be perfectly free, and take a direct motion G *g*, we muſt conſider its center of gravity G, as the point of ſupport, or F G as the arm of a lever; and the angle of rotation B R *b* is always proportional to the *abſolute force**, employed in the percuſſion.

18. Let us conſider the body B D, (*fig.* 5.) expoſed to the action of ſeveral forces at the ſame time, and it will appear that the angle of rotation will be proportional to the ſum or difference of the abſolute forces, according as they tend to turn the body B D, in the ſame or in contrary directions.

If the acting forces directly counteract each other, it is plain that their abſolute effect, with reſpect to the center of gravity G, muſt be ſought, and then deduct the exceſs of one from the other: then the angle of rotation will be proportional to that exceſs; inſtead of which, it will be proportional to the ſum of the forces employed, if they act in concert, and in the ſame manner, to augment it. But if you take no notice of the angle of rotation, and wiſh to conſider the center of gravity only as being tranſported from G to *g*, it is not neceſſary to find the ſum of the abſolute forces of the acting powers; but only to conſider the forces in themſelves, and then G *g*, will be found proportional to either their ſum or their difference, according as they contribute to produce the ſame effects, or as they are oppoſite in their efforts. Suppoſe theſe forces equal between themſelves, but acting in contrary directions on the extremities A and B, (*fig.* 6.) of the body A B, and on arms of equal levers. Then it is evident that the angle of rotation is double what it would be, if the body were ſtruck by only one of theſe forces, and turned on its center of gravity: ſince the two parts, ſeparated by the center, are ſtruck

* By the term *abſolute force*, we underſtand the force employed to turn the body, multiplied by the diſtance F G, from the center of gravity.

equally, and at the ſame time, by forces which act perpendicularly in contrary directions. To prove this, obſerve that the equal powers, S and T, act at the ſame time on the body A B, with equal levers, G K and G F: ſo that the extremity B paſſes to C. at the ſame time that A paſſes to D; and thereby the center of gravity, G, remains as if it were fixed in the ſame point which ſerves as a center of rotation; for, if one of the acting forces removes it from its firſt ſituation, the other, in oppoſing an equal force, will replace it.

If the power T exceeds the other S, it is evident that the center of gravity G, will be tranſported towards *g*, in proportion as the force T exceeds the other S; then the body A B could turn no longer on the center of gravity G, (§ 15.); but on another point E, which would be on the other ſide of the center of gravity G, with reſpect to the point of percuſſion.

If the body A B, (*fig.* 6.) were ſtruck at the two points, K and F, by two mobiles, S and I, exerting equal powers, with reſpect to the center of gravity G; it is plain that the whole body A B will be carried up on parallels, ſuch as I T and S H, and that the ſum of the two powers will act on the center of gravity G, ſince they are equal in every reſpect.

THEOREM.

19. A SAIL ACTS ALWAYS TWO WAYS ON A SHIP, WHEN IT IS NOT PERPENDICULAR TO HER LENGTH.

DEMONSTRATION.

We have only to conſider the ſail A B, (*fig.* 7.) oblique to the ſhip and to the wind, and we muſt be convinced (§ 1, 7.) that it is impelled in the direction C D, with a force expreſſed by the ſquare of the ſine of incidence of the wind upon the ſail. Therefore, what we are going to ſay here for the preſent caſe is to be underſtood as applicable in all others, in which the ſail ſhall not be perpendicular to the length of the ſhip; for, then, ſhe would go only in the direction of her length from C to E, or from C to F, according as the ſail might be full or a-back.

If C D be equal to the impulſe of the wind upon the ſail, as expreſſed by the ſquare of the ſign of incidence A V we have only to form the right-angled parallelogram G H, to be convinced that ſuch a direction is compoſed of the two effects C H and C G, which it produces with reſpect to the body E F, upon which it acts in impelling it in the direction C D.

REMARK.

The more the yard A B (*fig.* 7.) ſhall make the angle A C E acute, the more the effect C H will augment, and the other C G diminiſh; for, the more the angle A C E becomes acute, the more its equal D C H or C D G (§ 22) will be acute alſo; ſo that C D, which is perpendicular to the center of the yard, will approach more to C H, the other perpendicular to the length of the ſhip E F; which cannot happen without increaſing the ſhip's tendency to fall off in the direction C H, and increaſing likewiſe the cauſe C D, which follows in that increaſe the ſame proportion as the ſquare of the ſine of incidence augments (§ 1, 6, 7.). But this increaſe of the impulſe C D is not ſufficient to preſerve the effect of the ſail in the direction of the keel C G. On the contrary, it diminiſhes in the proportion of the decreaſe of the ſine A C E or C D G; whence it follows, that you never can augment the impulſe of the

wind by ſhifting the ſituation of the ſail, when it is properly trimmed, without leſſening the rate of ſailing (§ 28.), when neither the ſhip changes her courſe, nor the wind ſhifts.

20. It might, in the ſame manner, be demonſtrated, that the more open the angle A C E of the ſail A B is with the keel, the more its effect C G, in the direction of the ſhip's length, will increaſe in the ſame proportion as the increaſe of the fine of that angle, when the impulſe of the wind upon the ſail is the ſame; for, the fines of the angles are in proportion to their oppoſite ſides in the triangle C D G, of which the angle C D G is equal to the angle A C E.

If the impulſe augment alſo (§ 3.), the two effects, C G and C H, will augment proportionally.

21. If the ſail A B receive the impulſe of the wind E on its forward ſurface, it would ſtill act in two ways on the ſhip, by forcing her firſt a-ſtern in the direction C F, and then to leeward in the direction H C: to be convinced of this, reverſe the parallelogram, by tracing it on the after part of the yard towards F, and uſe the ſame reaſoning.

THEOREM.

22. THE ANGLE A C F (*fig.* 8.) FORMED BY THE YARD A B, AND THE KEEL F C OF THE SHIP, IS EQUAL TO THE ANGLE D C E COMPREHENDED BETWEEN THE PERPENDICULARS D C TO THE YARD AND E C TO THE KEEL, IN THE LIKE MANNER AS THE ANGLE C D G.

DEMONSTRATION.

The angle A C D is right, ſince C D is perpendicular on A B: the other angle F C E is right alſo; for C H is perpendicular on F I; therefore the arc A D is equal to the arc F H; and if, from theſe two equal arcs, be taken away the common one F D, the remainders A F and H D will be equal: becauſe, when equals are taken from equals, the remainders muſt be equal.

Secondly, the angle C D G in the parallelogram G E is alternate to the angle D C E: therefore it is equal to it; therefore it is alſo equal to A C F.

23. It follows, that the angle B C H is equal to the other angle D C F; for, if from the two equal arcs A D and B D, be taken the other equal arcs F A and D H, the remainders F D and H B will be equal alſo.

REMARK.

24. The few principles of Geometry here given, and which will be found of great ſervice in the ſequel, ought not to diſcourage. We make uſe of them now, only to eſtabliſh principles as ſimple as they are ſure, and to leave nothing to doubt or conjecture in the following part of this theory, which is in itſelf very abſtruſe. We ſhall however be obliged to uſe again a few more demonſtrations of this kind.

CHAPTER III.

OF THE MOST ADVANTAGEOUS ANGLE OF THE SAILS WITH THE KEEL AND THE WIND, IN ORDER TO OBTAIN THE GREATEST RATE OF SAILING, ON AN OBLIQUE COURSE.

25. IN moſt ſhips the ſails make with the keel an angle ADR (*fig.* 9.) of 40 degrees, or thereabouts, (ſome more, ſome leſs,) when cloſe-hauled. We are now to undertake to make it appear that this angle is not the moſt favourable to run with the greateſt velocity, in getting to windward. It ſhould be much more oblique; but as it is not poſſible, in practice, to attain the greateſt perfection, we muſt be contented to approach it as near as poſſible, in great ſhips, by reducing the angle ADR to 30 degrees only. This will be ſo much the more eaſily done, as in every ſhip the two foremoſt ſhrouds of each lower maſt can be ſuppreſſed. For it muſt be obſerved that in the movement of pitching and rolling, the maſts always incline forward, in the direction DE of the effort of the ſail; ſo that the ſhrouds which are abaft, and cat-harpened in, are ſufficient to ſupport the maſts, ſince they act nearly oppoſite to the effort of the ſail. Beſides, ſhould there be reaſon to expect bad weather, preventer-ſhrouds may eaſily be faſtened to the ſtrops which are always ready hung for that purpoſe. This practice is ſo much the better grounded, as the number of thoſe preventers can at any time be increaſed as circumſtances or neceſſity require.*

Therefore, we ſhall, for the future, conſider the angle ADR, which is the moſt oblique in practice, as fixed at 30 degrees, though, in ſome ſhips, it may happen to be more acute: a circumſtance to which particular attention ſhould be paid.

26. Among all the angles ADR, BDR, and HDR (*fig.* 9.) which the ſail AZ can make with the keel in the ſame courſe DR, it is evident there muſt be one more advantageous than the reſt, to produce the greateſt velocity poſſible in the moſt oblique courſe. That angle of the ſail and the keel is not what we propoſe directly to determine, ſince it is impoſſible to render it more acute than 30 degrees, the term to which we have fixed it in practice: but it will ſerve us to determine the moſt favourable angle of incidence ADV of the wind upon the ſail, and which is the moſt advantageous to run with the greateſt rapidity on all oblique courſes between cloſe-hauled and wind abaft.

27. Before we enter upon the demonſtration of the rule which muſt be followed in practice, the principle which ſerves to demonſtrate its utility muſt be firſt eſtabliſhed. It may be recollected that impulſions (§ 7.) are between themſelves as the ſquares of the ſines of incidence. Therefore, to judge if it is advantageous to render the angle of incidence ADS or ADV of the wind upon the ſail AZ, more or leſs acute, we muſt examine if the ſquare of the ſine of incidence AF, or the total impulſion DE, increaſes more or leſs than the ſquares of the ſines of incidence BC and HI, or than their correſpondent impulſions DG and DK, proportionally to the diminution or increaſe of the ſines of the angle of obliquity of the ſail with the keel AT, BY, and HL: for, if the ſquare of the ſign of incidence HI, or the impulſion DK, does not increaſe ſo much proportionally, as the ſine of obliquity

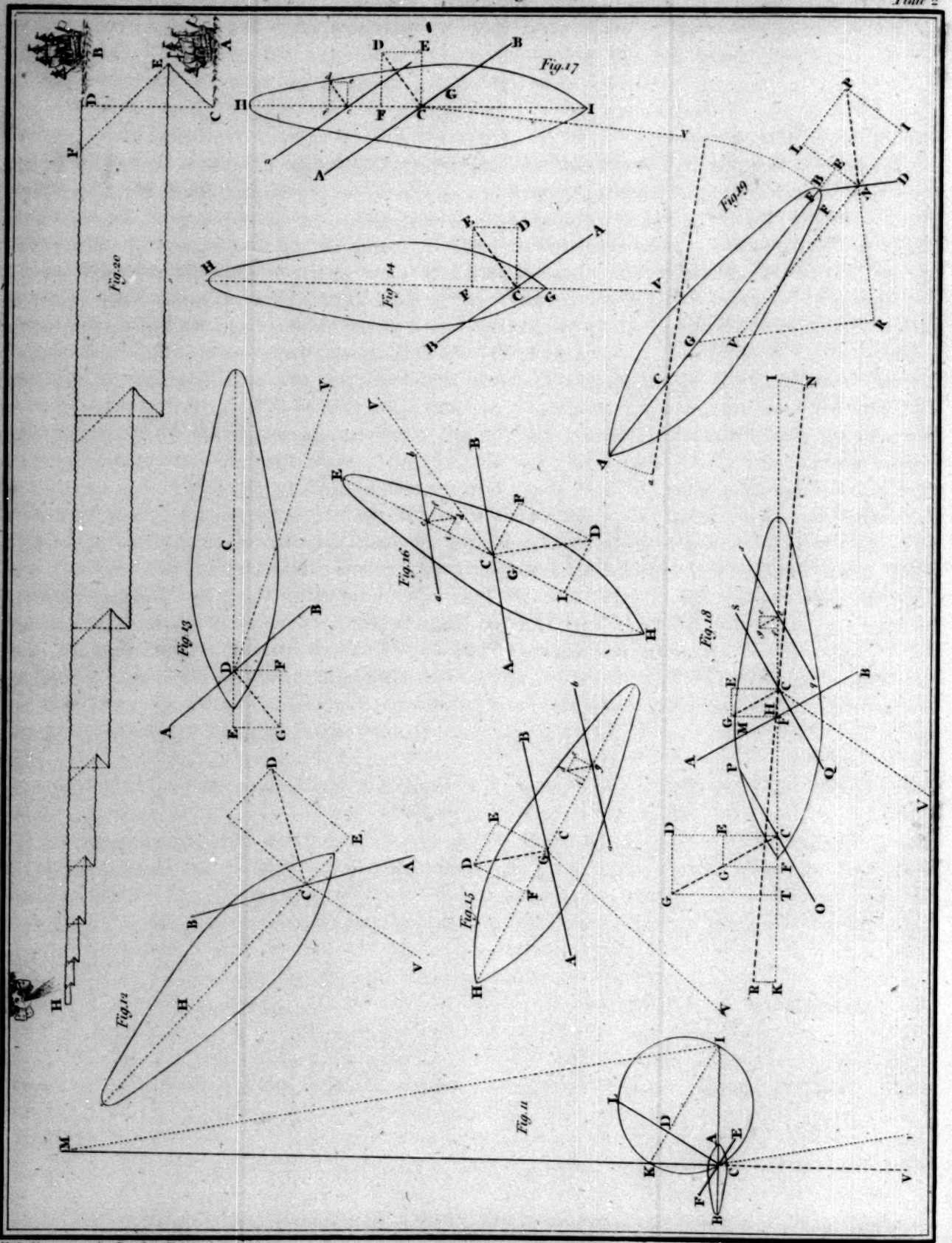
* This recommendation of M. Bourdé, to ſuppreſs the two foremoſt ſhrouds of each lower maſt, in order to brace up ſharper, we are warranted in ſaying, cannot be followed in the Britiſh navy. It was lately determined, upon a conſultation of the Officers of the King's Yards, the queſtion having been referred to them, that the preſent number and dimenſions of the rigging of ſhips could not be advantageouſly altered, or ſafely diminiſhed. And, as to occaſionally caſting them off, it may be rendered, by the inevitable accidents of navigation, highly dangerous; as, for inſtance, in caſe of being ſuddenly taken a-back, this leſſening of the ſupport of the maſt might be attended with its loſs.

A T diminiſhes in becoming equal to L H, it is evident that the poſition of the ſail A D is more favourable than when it is ſituated in the direction D H: and if the ſquare of the ſine of incidence B C, or its correſpondent impulſion D G, diminiſhes more in proportion than the ſine A T augments, in becoming equal to the other ſine of obliquity B Y, in the other poſition of the ſail; it is an evident proof that its ſituation A D is ſtill more favourable than if it were in the poſition B D, and that there is even no better ſituation than A D, whether the angle of incidence A D V be increaſed or diminiſhed.

28. To prove it, we ſhall conſider (*fig.* 9.) the abſolute impulſions D K, D E, and D G, as correſpondent with the ſines of incidence H I, A F, and B C, and proportional to the ſquares of theſe ſame ſines; then, on theſe diagonal lines, if we draw the rectangles X N and M O, in order to diſſolve thoſe total impulſions D E and D G, it will appear evident that the direct effort D X in the direction of the keel, is the greateſt poſſible, when the tangent A S of the angle of incidence is double the tangent A R of the angle of obliquity of the ſail with the keel; for, if the angle of incidence be opened ten degrees, by placing the ſail in the ſituation H D, it will appear that, though the total impulſion D K is augmented in the ratio of the ſquare of the new ſine of incidence H I to the firſt A F, the partial effort D M, in the direction of the keel, will be nearly by one tenth leſs, in this ſituation of the ſail H D, than in the firſt A D. The direct impulſions D M, proceeding from the total ones D K and D G, are equal, becauſe theſe laſt have augmented or diminiſhed in the ſame ratio as the ſines H L and B Y have leſſened or increaſed in proportion to the ſquare of the ſine of incidence A F, and to the ſine of obliquity A T. Theſe direct partial impulſions D M and D X are in a compounded ratio of the ſines of obliquity H L, A T, B Y, equal (§ 22.) to thoſe of the angles D K M, D E X, D G M, and of the total impulſions D K, D E, and D G; for, if the total impulſion augment by a movement of the ſail, the ſine of obliquity diminiſhes: ſo that from the total impulſions can at any time be deduced the direct ones for every poſſible angle of incidence. We might very well verify by calculation this demonſtration, which proves that the tangent A S of the angle of incidence muſt always be double the tangent A R of the angle formed between the ſail and the keel, agreeably to the ſituation of the ſail A Z; ſince if any other poſition be given to it with reſpect to the wind V, whether it be in the direction H D ten degrees more open than A Z, or like B D ten degrees more oblique, a reſult, as D M, in the direction of the keel, will ever be found leſs than D X.

OBSERVATIONS.

AS the vanes always indicate the apparent direction of the wind, on all the courſes the ſhip can ſail, the angle which the wind makes with the courſe, or the keel, cannot fail being eaſily known if there is no lee way; let that angle with the ſails be parted into two others, ſo that the angle of obliquity of the ſails with the courſe may have its tangent equal to half the tangent of the apparent angle of incidence of the wind upon the ſails. On this foundation, it will be eaſy to form a table which will always ſhow both the apparent angle of incidence, and that of the obliquityof the ſail with the keel, or with the courſe. This table will ſerve for all oblique courſes, provided the after ſails cover thoſe forward only in a trifling degree; for, ſhould they becalm them much, they muſt, for other conſiderations, be braced up a little more to the windward; but always leave the apparent angle of incidence of the wind upon the ſail more open than that between the ſail and the keel, or the courſe.



V. Woodthorpe sculp. No 27 Fetter Lane Fleet Street.

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ARTICLE I.

REMARKS ON SAILING BY THE WIND.

29. When it is desired to gain to windward as much as possible, without absolutely wishing to sail with the greatest velocity, let the direction of the coast under the lee be supposed to make with the absolute direction of the wind (which must as near as possible be known) an angle of 90 degrees; or, in the sea phrase, *blowing dead on shore:* let the angle A C E (*fig.* 10.) formed by the sail and the keel, be known to be 30 degrees, let the lee-way be also known to be ten degrees, the angle E C I between the sail and the course will consequently be 40 degrees, which you must take from the total angle V C L 90 degrees; then there will remain 50 degrees, the half of which, 25 degrees, is to be taken for the absolute angle of incidence V C E, and for its equal I C L; so that the ship A B will go 55 degrees from the wind when she is close hauled, and will consequently recede as much as possible from the point D on the coast, the direction of which makes an angle of 90 degrees with the absolute direction of the wind V K.

But, if the situation C L, (*fig.* 11.) of the point D, from which you wish to move, made an obtuse angle V C L, with the positive direction of the wind V M; then, the tangent of the apparent angle of incidence V C E must be made double the angle of obliquity E C I which the sail makes with the course, at the same time that the angle I C L, of the course and the coast shall be made equal to the angle V C E, formed by the real direction of the wind V K, and of the sail F E: so that two considerations must at once be attended to. For example: the angle A C E, formed by the sail and the keel, is 30 degrees; then, according to the first principle, it will be necessary that the apparent angle of incidence V C E, should be 49° 6′; and, if the difference between the apparent and real direction of the wind be 10°, there will be 59° 6′ for the angle which the sail E F, makes with the real direction of the wind V M: so that the angle L C I, of the course and the object stood from, must be found also to be 59° 6′, and the total angle L C V, will then be 148° 12′, adhering to the two principles of sailing with the greatest velocity, and of getting to windward of the point D, as much as possible, at the same time; while the angle L C V, formed by the apparent direction of the wind and that of the coast from which the ship moves, will be only 138° 12′. The yawing and the different velocities of the ship render the angle formed by the two directions of the wind, (the real and the apparent,) more or less open. If the ship has more velocity at the same time, or if the course approaches more to the direction of the wind, it will appear by the vanes that the wind draws forward, and the angle of the two directons of the wind will augment. If the ship falls off, and yet still preserves the same velocity, or if her velocity decreases without altering her course, the wind will seem by the vanes to draw aft, and the angle of the two directions will diminish; so that, whenever the ship shall have velocity or run obliquely to the wind, there will always be a difference between its real and its apparent direction. In short, if the ship run exactly before the wind, or have no motion at all, there will be then no other but the real direction of the wind shown by the vanes: but happen how it will, in oblique courses this is however certain, that the sails are always struck by the absolute direction of the wind; because, their position being once fixed by the braces and bowlines, it can no more change, but continues as steady as the real direction of the wind; for it is the vanes only which, being moveable, fix themselves in a middle direction between the absolute tendency of the wind and the course of the ship; whence we may easily conclude, as we did before, that the apparent direction of the wind shown by the vanes, is

a medium between the reſpective velocities of the ſhip and of the wind; ſince that direction neceſſarily partakes more of the greater velocity than of the leſs: ſo that, if the ſhip runs Eaſt, with the wind at South, having the fourth part of the velocity of the wind, the vanes will ſhow s. s. E. 4° 30′ s for the apparent direction of the wind.

ARTICLE II.

THEOREM OF M. BOUGUER.

The velocity and real direction of the wind is C M (*fig.* 11.) ſuppoſe the ſhip A B, of which E F is the ſail ſituated at pleaſure, to draw the courſe C I, while the particles of air run in the direction C M: if, from the point I, be drawn I K, parallel to the ſail E F, till it cuts the direction of the wind, V K, in the point K, there will be given the three points C, I, K, through which draw the circumference of a circle C I L K, and that circumference will ſhow the extent of the forces acting on the ſhip, at the ſame time, in following the courſe C I, provided her ſail be always trimmed in the ſame manner with reſpect to her keel.

DEMONSTRATION.

The apparent or relative velocity of the wind is repreſented by I M (*fig.* 11.) in the courſe C I; and as I K is parallel to the ſail E F, the angle M I K is equal to the apparent angle of incidence V C E. But to be more explicit: the wind ſtrikes the ſail with its apparent or relative velocity I M, (and not with its abſolute velocity, becauſe of the motion of the ſhip,) and with an angle of incidence M I K = V C E: ſo that, if the ſhip runs cloſe hauled or perpendicular to the direct wind V C, I M will become in both caſes ſtronger than the abſolute velocity; becauſe the ſhip will either approach to the ſource of the wind, or not recede from it. But the impulſe on the ſail is proportional to the ſquare of the velocity I M, multiplied by the ſquare of the ſine of the angle of incidence M I K, equal to the angle V C E (§ 3. & 7.) and the proportion M K : *ſine* K I M : : M I : *ſine* M K I, which funiſhes us the triangle K I M, ſhows us that M K × *ſine* M K I = M I × *ſine* K I M; ſquaring the two products, and ſubſtituting the ſine of the angle V K I in the room of the ſine of the angle M K I, which is equal to it, ſince they are the ſupplement of each other, we ſhall then have this other equation: $\overline{\textit{ſine}\ \text{V K I}}^{2} \times \overline{\text{M K}}^{2} = \overline{\textit{ſine}\ \text{K I M}}^{2} \times \overline{\text{M I}}^{2}$; whence it follows, that inſtead of expreſſing the actual impulſe of the wind upon the ſail by the ſquare of I M, multiplied by the ſquare of the ſine of the angle K I M, it may be expreſſed by the ſquare of M K, multiplied by the ſquare of the ſine of the angle V K I, or of its equal V C E, formed by the abſolute direction of the wind V M, and the ſail E F.

We muſt not forget to be very attentive to this; viz. that the impulſe of the wind upon the ſails is in equilibrium with the effort of the water on the bows, or that they are exactly equal and contrary when the ſhip is come to an uniformity of motion (§ 9.) as here we ſuppoſe her to be. Beſides, the impulſe of the water on the bows is proportional or equal to the ſquare of the velocity of ſailing C I, (§ 3.) ſo that the ſquare of the velocity of ſailing C I, is equal to the actual impulſion of the wind upon the ſail expreſſed by the ſquare of K M, multiplied by the ſquare of the ſine of the angle V C E; and if s be ſuppoſed equal to the ſine of V C E, or of V K I, we ſhall always find $\overline{\text{C I}}^{2} = \text{s} \times \overline{\text{K M}}^{2}$. The

The firſt term in this equation repreſents the impulſe of the water on the bows, and the ſecond expreſſes the effort of the wind upon the ſails; and, if the ſquare roots of the one and of the other be taken, it will be found C I = S × K M; that is to ſay, that the very velocity of ſailing C I, will be continually equal or proportional to the product of K M by the ſine S of the angle V C E or C K I. The proportion between theſe quantities depends on the denſity of the two fluids, and on the magnitude of the ſurfaces ſtruck: but it will be the ſame in all the different courſes.

The different velocities of ſailing C I, have a conſtant and given proportion with the products S × C K and C I × *ſine* C I K; for the triangle C I K gives S : C I : : *ſine* C I K : C K, which forms this equation, S × C K = *ſine* C I K × C I; and all the angles C, I, K, are conſtant and known, ſince they are equal, being alternate to that which the ſail makes with the courſe. But, as the velocity C I bears a continual and conſtant proportion with the product S × K M, and as it bears alſo a conſtant proportion with S × C K, it follows that S × K M : S × C K : : K M : K C; ſo that the point K always divides C M in the ſame proportion: the point K is then invariable when the ſail, as well as the lee way, are both the ſame; (which never happens, however, as will be made appear (§ 47.) hereafter) but, in admitting thoſe two hypotheſes, which never can deviate from the truth but in reſpect to the lee way, which is always variable in the ſame ſhip, according to the different circumſtances of wind, ſea, velocity, ſail, and courſe, it ought then to be concluded that all the points, I, &c. will be ſituated on the circumference of a circle; for, without that, the angles C I K equal to thoſe which are formed by the courſe and the ſail, and which are ſupported on the ſame chord C K, would not be equal.

COROLLARY.

Admitting therefore, (*fig.* 11.) that the velocities are continnally proportional to the ſines (whatever they be) of the angles V C E, which the ſail makes with the abſolute direction of the wind, provided the ſail be always trimmed in the ſame manner with reſpect to the keel, and that, in the triangle C I K, the ſide C K and the angle C I K are conſtant, and the velocities of ſailing C I are proportional to the ſine of the angle C K I equal to the angle of incidence V C E; it follows, that, all the other conditions being the ſame, the more the ſine of the angle V C E is augmented, the greater will the rate of ſailing be; ſo that, if you want to carry it to the greateſt rapidity, you have only to make a right angle of the angle V C E formed by the abſolute or real direction of the wind with the ſail; then the velocity C I will no longer be a ſimple chord in the circle C K I, but a diameter. This holds good for all the ſhips which have but one ſail ſet; but, whenever they ſhall have ſeveral, the greateſt velocity will be when the apparent angle of incidence of the wind upon the ſail makes a right angle with the courſe; becauſe then the ſails will eaſily make with the apparent wind, an angle, of which the tangent will be double that of the angle they make with the courſe, without their becalming one another; while, at the ſame time, the ſhip will receive all the abſolute impulſe of the wind, becauſe ſhe does not recede from it, and it is the time when the greateſt ſurface of ſail is expoſed to its impulſe. The ſame advantage of the greateſt velocity will ſtill be had, when the apparent direction of the wind makes an angle of an hundred degrees with the courſe; and in this ſituation, the velocity will in ſome degree be increaſed. In a word, whenever the after ſails do not becalm thoſe forward, the ſhip's rapidity may always be increaſed, by trimming the ſails as directed (n. 28.) but when the ſails take the wind from one another, an increaſe of velocity can no longer be pretended to.

We are now going to demonſtrate the exactneſs of the rule given before. (§ 29.) When it is required to get off ſhore, or recede from a given right line with all poſſible expedition, or to keep abſolutely as cloſe to the wind as the ſhip will lie; C M (*fig.* 11.) is the abſolute direction of the wind; the circle C K L I marks all the points at which the ſhip can arrive with the ſame ſail, the ſame diſpoſition, without alteration of lee-way, and at the ſame time; and C L is the right line from which ſhe is to move. Knowing the angle that line makes with the abſolute direction of the wind V M, it is evident that the point I of the circumference, where the courſe ought to end, is in the middle of the arc C I L, of which C L is the chord: and all the points from one part to the other of C I, where the ſhip can come to at the ſame time, are leſs diſtant from C L, ſince D I, perpendicular to C L, divides it into two equal parts, and is the longeſt of all the perpendiculars which can be drawn from the circumference C I L; but the point I, cannot be taken without rendering the angle L C I equal to the angle C K I, which itſelf is equal to the angle V C E.

ARTICLE III.

A TABLE OF THE SITUATION OF THE SAILS TO RUN WITH THE GREATEST VELOCITY.

M. BOUGUER.

	Angles of the apparent direction of the wind and courſe.		Angles of the ſails with the keel.		Angles of apparent incidence of the wind on the ſails		
	D.	M.	D.	M.	D.	M.	
	180,	00	90,	00	90,	00	
	176,	15	87,	30	88,	45	
	174,	37	86,	25	88,	12	
	172,	30	85,	00	87,	30	
	168,	44	82,	30	86,	14	
	164,	58	80,	00	84,	58	
	161,	10	77,	30	83,	40	
	157,	22	75,	00	82,	20	
	153,	33	72,	30	81,	03	
	149,	41	70,	00	79,	41	
	145,	48	67,	30	78.	18	
	141,	53	65,	00	76,	53	
	137,	55	62,	30	75,	25	
	133,	54	60,	00	73,	54	
	129,	50	57,	30	72,	20	
	125,	42	55,	00	70,	42	
	121,	31	52,	30	66,	01	
	117,	14	50,	00	67,	14	
	112,	53	47,	30	65,	23	
	108,	26	45,	00	63,	26	
a	.....		.....		.....		*b*
	103,	53	42,	30	61,	23	
	99,	13	40,	00	59,	13	
	94,	25	37,	30	56,	55	
	89,	28	35,	00	54,	28	
	84,	23	32,	30	51,	53	
	79,	06	30,	00	49,	06	
	73,	39	27,	30	46,	09	
	68,	00	25,	00	43,	00	

N. B. The foregoing TABLE can be of no great ſervice, except in the eight laſt circumſtances under the line *a*, *b*; becauſe, in all the caſes mentioned above that line, the ſails will cover one another too much.

OBSERVATIONS.

When a faſt ſailing ſhip (ſuch as will, on a direct courſe, or right before it, take a third or a fourth part of the velocity of the wind) comes to run with the ſame quantity, or more ſail, on a perpendicular to the apparent direction of the wind, then ſhe acquires a greater rapidity of ſailing with reſpect to the velocity of the wind; the angle made by the two directions, the apparent and the abſolute, is at that time very conſiderable; it may be from 18° to 22° 30′; and if the ſhip hauls quite cloſe by the wind, the angle will ſtill be nearly the ſame; for, her velocity diminiſhes: but, as it is in ſailing by the wind that it is moſt eſſential to know the greatneſs of the angle between the two directions of the wind, let the angle between the directions of the ſhip's head on the different tacks be obſerved, without paying any regard to the lee-way, but juſt to the exact point on which the ſhip ſtands, before and after going about, when ſtrictly by the wind, neither too much to leeward nor to windward; and when you have determined that angle, from two or three obſervations, halve it, and then you will have the angle formed by the keel and the abſolute direction of the wind; by which you will know the quantity ſhe will come to upon the different tacks, and will never be deceived with reſpect to the lying on after having gone about: a miſtake pretty commonly made by thoſe who pay attention only to the apparent direction of the wind, which always makes with the real one an angle more or leſs open in a compound ratio of the greateſt velocity with the greateſt obliquity of the courſe of the ſhip, with reſpect to the direction and the abſolute velocity of the wind; things which vary in all ſhips, becauſe they have not all the ſame advantage of ſailing with the ſame rapidity in ſimilar circumſtances.

CHAPTER IV.

OF THE SAILS WHICH ARE BEFORE THE CENTER OF GRAVITY OF A SHIP.

30. THE ſails which are before the center of gravity of a ſhip, are the ſprit-ſail, ſprit-ſail top-ſail, the jib, the fore-top-maſt ſtay-ſail, and the fore ſtay-ſail.

Beſides theſe ſails there are, on the foremaſt, the foreſail, fore-topſail, fore-topgallant-ſail, and fore-topgallant-royal-ſail, with their reſpective ſtuddingſails. Now theſe four laſt ſails may be regarded as only one large ſail, wide at the foot and tapering towards the head, and which can be reduced, as occaſion requires, either by taking in the royal, or by reefing the fore-top-ſail, or even taking it quite in, if neceſſary, to have the fore-ſail only ſet; or by hauling the fore-ſail up, if nothing but the top-ſail is wanted. It muſt notwithſtanding be obſerved alſo, that the different parts of the whole ſail may, in certain caſes, be worked differently the one from the other; as, for example, in reefing the top-ſail, or in taking in either the one or the other. But, when you want to ſet them to work all together, either for making a courſe, or performing ſome evolution, they muſt all be braced and trimmed in the ſame form, and with the greateſt uniformity poſſible. Therefore, whatever we ſhall ſay concerning one of them in any operation, is to be underſtood to be the ſame with reſpect to all the reſt.

The main-ſtay-ſail, the main-top-maſt ſtay-ſail, the middle-ſtay-ſail, and the main-top-gallant ſtay-ſail, are likewiſe ſails of the fore-part of the ſhip's center of gravity.

ARTICLE I.

OF THE EFFECT OF THE FORE-AND-AFT-SAILS, WHICH ARE ON THE FORE PART OF THE CENTER OF GRAVITY OF A SHIP.

31. THE jib and ſtay-ſails being of a triangular figure, their center of gravity is eaſily found; and that point is to be conſidered as the part, in all theſe ſails, on which the whole effort of the wind is united, when they are expoſed to its impulſe, in whatever way it ſtrikes them.

The particular effort of each fore-and-aft ſail being on the fore part of the center of gravity of the ſhip, it follows that the total effort of all theſe ſails muſt be there too; and that, if the ſhip was in a perfect equilibrium with reſpect to the wind, before her ſails were ſet, ſhe will loſe it immediately after (§ 11.) they will make the fore part of the ſhip obey the wind, whenever it ſtrikes them perpendicularly or obliquely. For, it muſt be obſerved, that almoſt all theſe ſails have their tacks in the middle of the ſhip, and their ſheets lead to the ſides; ſo that they make with the keel a very acute angle: whence it is eaſy to conceive, that the perpendicular which would be raiſed on the exterior ſurface of theſe ſails, in the direction of their effort to leeward, from their center of gravity, would differ but very little in the lateral direction from a perpendicular to the keel. From this we may therefore conclude, that theſe ſails would have but very little effect to accelerate the rapidity of ſailing with reſpect to their poſition, if it was not demonſtrated that they are very advantageous in going by the wind. They make the ſhip ſteer well, and are particularly uſeful when a ſhip gripes much: and, when they do not take the wind out of any of the lower ſails, they ought to be uſed, particularly when one is obliged to ſail by the wind, or to run not very large. The jib and fore-top-maſt ſtay-ſail muſt be preferred, becauſe they are at all times uſeful when they can receive the wind; for, by their poſition, they can take the wind out of any of the other ſails, and their particular effect in veering is conſiderable, not only on account of their great ſurface, but becauſe they act before the point, on which the ſhip turns, with a very long arm of a lever (§ 17.) On the other hand, all the ſails draw the ſhip a-head in raiſing her: for the direction of their effort aſcends obliquely towards the horizon; therefore, they do not make her plunge in the water, which is an advantage peculiar to them. Experience has confirmed their utility on all occaſions when they can be employed without taking the wind out of the other ſails.

ARTICLE II.

OF THE EFFECT OF THE FORE-SAIL, FORE TOP-SAIL, FORE TOP-GALLANT-SAIL, AND SPRIT-SAIL, IN THEIR DIFFERENT SITUATIONS.

32. WHEN the ſail A B (*fig.* 12.) is trimmed cloſe to the wind which blows from the point V, it is impelled in the direction C D (§ 7.) with a force expreſſed by the ſquare of the ſign of incidence, and compoſed of the two effects C E and E D (§ 19.) But, as the center of effort of that ſail A B is on the fore part of the center of gravity of the ſhip H, and as its power C D is always decompoſed between thoſe two effects C E and E D, it follows, that the effect of this ſail is to cauſe the ſhip to bear away; while it keeps up at the ſame time, and even augments, the rapidity of ſailing.

33. If the fore-ſail A B received the impulſe of the wind perpendicularly, it would ſtill produce the effects of bearing away, and augmenting the rate of ſailing, for the reaſons juſt given above, but more effectually would it do ſo (§ 29.) on account of the increaſe of the impulſe of the wind upon the ſail.

34. IT follows, from what has been ſaid, that when the ſails upon the fore-maſt are full, on the ſame ſide they are tacked, being braced obliquely to the keel, there is always one part of their effort, in proportion to their obliquity, which acts to make the ſhip bear away; while the other part of their effort acts at the ſame time to accelerate or keep up the rate of her ſailing.

35. When the ſails A B of the fore-maſt (*fig.* 13.) are ſituated obliquely with reſpect to the keel, and receive the wind in them, on the ſide of the ſheet B, they act upon the ſhip in bringing her up to the wind, becauſe their effort D G being diſcompoſed, as cuſtomary, the lateral part D F carries the fore part of the ſhip towards the ſource of the wind V, in carrying her from D to F.

REMARKS.

36. IN general, when the yards are ſquare or perpendicular to the keel, it is evident that they will act on the ſhip, only by impelling her right in the direction of the keel, from ſtern to head, or from head to ſtern, with more or leſs velocity, in proportion to the impulſe of the fluid which ſtrikes them.

37. When the ſails A B on the fore-maſt (*fig.* 14.) receive the impulſe of the wind V, on their ſurfaces forward, they will make the ſhip both go a-ſtern and fall off; becauſe the direction C E of their effort, being turned towards the after-part, ſerves as a diagonal to the parallelogram F D, which, by diſcompoſing it, will ſhow us thoſe two effects C F and C D, the firſt of which takes its direction with that of the keel from forward aft; while the ſecond takes it in a lateral direction in making the ſhip to turn.

38. When the wind blows between the keel and the yard, the ſhip comes to, until the point G (*fig.* 14.) is in the direction of the wind V. But, as ſoon as this is done, it is evident that ſhe falls off; for the point G recedes farther and farther from the direction of the wind. Whence we may remark, that, as ſoon as the weather part of the ſail catches a-back, on the tack ſide, the angle of incidence of the wind on it goes continually increaſing, till the ſhip has fallen off ſo much, that her ſail becomes perpendicular to its direction: and, if the veſſel continues to fall off, then the angle of incidence diminiſhes more and more, till the ſail is parallel to the courſe of the wind which comes from the tack B, or, as it is called, *ſhivering*.

CHAPTER V.

OF THE SAILS WHICH ARE ABAFT THE CENTER OF GRAVITY OF A SHIP.

39. THE main-ſail, main-top-ſail, main-top-gallant-ſail, and main-top-gallant-royal-ſail, and their reſpective ſtudding-ſails; the mizen-ſtay-ſail, mizen-top-maſt-ſtay-ſail the mizen-courſe, mizen-top-ſail, mizen-top-gallant-ſail, and mizen-top-gallant-royal-ſail; are all ſails, which are placed abaft the center of gravity of a ſhip, which is alſo abaft the point round which the total effort of the ſails is placed.

ARTICLE. I.

OF THE EFFECT OF THE FORE-AND-AFT SAILS ABAFT THE CENTER OF GRAVITY OF A SHIP.

40. THE center of effort of theſe ſails being abaft the center of gravity of the ſhip, it follows that they always force the after-part of the ſhip to leeward, and conſequently contribute to bring her to the wind, as ſoon as they receive its impulſe; for, that movement of the after-part of the ſhip cannot happen, without the head approaching to the direction of the wind.

The fore-and-aft ſails being in general ſituated very obliquely, it follows, conſiſtently with principles, that they are very advantageous for ſailing by the wind. Therefore, we muſt not neglect augmenting them: obſerving, at the ſame time, that they do not take the wind out of one another, nor becalm the principal ſails. They are only to fill up the ſpace between the maſts fore and aft, in ſailing near the wind, in order that no wind may be loſt.

ARTICLE II.

OF THE EFFECT OF THE SQUARE SAILS OF THE MAIN-MAST, AND OF THE MIZEN-TOP-SAIL, IN THEIR DIFFERENT OBLIQUITIES.

41. AS we have already demonſtrated (§ 19.) that when the ſail A B *(fig.* 15.) is trimmed obliquely to the keel, it produces evidently two effects on the ſhip; it muſt therefore follow, that, in diſſolving its power C D, we ſhall find its compound effects, the one C F, in the direction of the keel which produces the velocity, and the other C E lateral, which (in forcing the after-part of the ſhip to leeward, by its action on the point C abaft the center of gravity G of the ſhip) occaſions her to come to the wind; for that motion of the ſtern from C to E cannot take place, unleſs the fore-part H acts contrarily in coming towards the point from which the wind blows, v.

42. If the ſails A B were more or leſs oblique to the keel, they would ſtill have the ſame effects of keeping up the ſhip's velocity, and bringing her to the wind. And, if they received its impulſe perpendicularly, it would ſtill be the ſame thing, producing thoſe two effects, however, with greater efficacy than in any other ſituation with reſpect to the wind, becauſe then they receive its greateſt poſſible impulſe for the time.

43. When the ſails A B (*fig.* 16.) of which the center of effort C is abaft the center of gravity of the ſhip, receive the impulſe of the wind V on the ſheet ſide, being placed obliquely to the keel, they will cauſe the ſhip to fall off, by forcing the after-part from C to F, towards V, the ſource of the wind, while they will, at the ſame time, keep up the velocity C I. For, this motion of the after-part towards V, cannot be executed without the fore-part H going, as it moves off, in a contrary direction; and ſhe will continue to fall off till the keel E H be right in the direction of the wind V C, or right aft; then the ſhip will come to the wind, as ſhown in the two preceding articles.

It may be remarked that, in this movement of the, ſhip the angle of incidence goes continually increaſing till the wind is perpendicular to the ſails.

44. When the ſails A B (*fig.* 17.) of which the center of effort is abaft the center of gravity G, ſhall receive the impulſe of the wind V on their forward ſurfaces, they will make the ſhip come to the wind, and go a-ſtern at the ſame time. For the direction of their effort C D may be diſſolved between the two efforts C F, in the direction of the keel, from forward to aft, and C E lateral and perpendicular to the keel; ſo that the after-part C H is forced to leeward from C to E, while the fore-part I approaches, by a contrary motion, the point of the wind V. In this caſe, therefore, the ſhip comes to, and goes a-ſtern.

45. When the ſhip is ſo far come to the wind, that the fore-part I (*fig.* 17.) has come into its direction, it is evident, that ſhe will fall off more and more; for, that point I will conſtantly move from the point of the wind V; therefore, it is demonſtrated that, in this caſe, the ſine of incidence is continually decreaſing more and more, till it is reduced to nothing. But, if the direction of the wind had made an obtuſe angle V C B, the ſine of incidence would have augmented until the direction of the wind had been perpendicular to the ſails; and it is at that moment only it would have begun to diminiſh, as we have ſhewn before.

CHAPTER VI.

OF THE EQUILIBRIUM NECESSARY TO BE KEPT IN PRACTICE, BETWEEN THE SAILS BEFORE AND ABAFT THE CENTER OF GRAVITY OF A SHIP, IN ORDER THAT THE SAILING MAY BE THE MOST DIRECT AND THE MOST RAPID.

46. AFTER having demonſtrated the different effects of the ſails both before and abaft the center of gravity, it is clear that if either the head or after ſails only were ſet, in ſailing by the wind, the ſhip would not only ſteer badly, but conſequently ſail not ſo faſt, as ſhe could under the ſame quantity of ſurface, differently diſpoſed. For, if the ſhip be ſuppoſed (*fig.* 18.) to be under her head ſails, and one half be retrenched and ſet on the maſts abaft, it will evidently appear that the velocity C T they produced is the ſame, ſince the direction and the velocity of the wind act always in the ſame manner on the ſame quantity of ſurfaces; the only difference which will be found, is, that the primitive effect is divided, and acts now on the points C, C, E before and abaft the center of gravity of the ſhip. It is not the ſame with reſpect to the effect C D, which acted only the head of the veſſel in the firſt diſpoſition of the ſails, becauſe that effect being now divided on the after-maſts, it is diminiſhed one half C E forward, by reaſon of that force being tranſporting aft, where, balancing the effect of falling-off produced by the head-ſails, it keeps the ſhip to the wind; by equality in the movements (§ 34 & 42.) I ſay that it *balances*, becauſe, when the weather permits, we may at any time either increaſe or di-

minish the ſails, ſo as to preſerve an equilibrium between their powers, and fix the ſhip on her courſe. When this point of equilibrium is obtained, we then poſſeſs the moſt advantageous diſpoſition the ſails can have for the veſſel to run with the greateſt celerity; provided that they have been trimmed in the moſt favourable manner to receive (§ 28.) the greateſt impulſe of the wind.

This equilibrium between the powers of the ſails forward and aft, is likewiſe advantageous with reſpect to the rudder; becauſe, as there is leſs occaſion to uſe it to regulate the movements of the ſhip, its ſurface oppoſes itſelf but little, and leſs often, to the ſhock of the water, which glides along the ſhip's bottom. It is then of the greateſt importance, in endeavouring to increaſe the ſhip's way, to combine, as much as poſſible, the reciprocal effect of the ſails fore and aft; either in ſetting them to the wind, or in diſpoſing more advantageouſly, forward or abaft, a greater or a leſs quantity of ſails, according as the ſhip is more or leſs inclined to fall off, or come to; in order to make as little uſe of the helm as poſſible; the whole power of which, however, at the time of performing any evolution, muſt be put in action, as we ſhall make appear hereafter.

OBSERVATIONS.

47. When there is an equilibrium between the ſails fore and aft, the reſiſtance of the water from A to B (*fig.* 18.) on the bows is equal to the power of the ſails, whether it paſſes through the center of gravity H of the ſhip, or through another point of the axis, more or leſs forward or aft; then a ſhip, thus ſituated, finds no more difficulty to veer than to come to the wind, with reſpect to the reſiſtance of the water under her lee; ſince all things are equal, viz. the reſiſtance of the water upon the bottom to leeward, and the impulſe of the wind upon the ſails. But it muſt be conſidered that the power compoſed of thoſe of all the ſails united, acts upon the ſhip according to the direction B A, perpendicular to their ſurfaces, the origin of which is the point H, a middle between all the effects C G of the ſails fore and aft, which ought to correſpond exactly with the reſiſtance of the water from A to B: ſo that the ſhip is puſhed to leeward of the courſe I K, which ſhe holds into the direction B A of the effort of her ſails; but the reſiſtance which ſhe finds from the water on the lee-ſide of her bottom, from A to B, ſets her to rights again by its oppoſition, which is greater by reaſon of the greater facility ſhe finds in dividing the fluid with her ſtem, than with her ſide; ſo that ſhe runs on the true courſe N R, which approaches nearer to that on which ſhe ſteers than B A. Therefore the angle K H R of the lee-way is proportional to the greater or leſs reſiſtance the ſhip finds laterally from the fluid under her lee; which reſiſtance depends intirely on the more or leſs facility ſhe finds in dividing the water with her bows; ſo that the lee-way can never be conſiderable but when cloſe hauled; for this reaſon, it is not much taken notice of when the courſe is leſs oblique than the wind on the beam. We might purſue this reaſoning ſtill further, from an experienced fact, which will prove that the lee-way depends, not only on the form of veſſels, but ſtill more on their greater or leſs velocity, and ſeldom, or never, on the intire diſpoſition of their ſails more or leſs oblique to the keel, as ſome authors have advanced. For, when a fine ſailing veſſel is trimmed ſharp, with all her ſails ſet, in a very light breeze, with which ſhe ſcarcely obeys the rudder, the lee-way is conſiderable, though the ſea be perfectly ſmooth. This great lee-way is made by the ſhip, becauſe the veſſel being only gently impelled, and with little force, the water, not being ſhocked with violence, offers little reſiſtance, and ſhe is then carried eaſily by her ſails in the direction of their effort B A: and, if we conſider the ſide of the ſhip, in the act of ſailing, preſenting a very great ſurface of ſails above the water, it will viſibly appear the lee-way will become ſtill more perpendicular to the keel. But, let the

wind begin to freſhen, then the rapidity of ſailing augments conſiderably; the ſhip ſhocks the water with a force expreſſed by the ſquare of ſix or nine knots of velocity from B to A (*fig.* 18.) in the ſpace of an hour, while the water repels her effort in a contrary direction: the water repels then in the ratio of this ſquare to the ſquare of her firſt velocity, and now no longer yields with facility (§ 4); the lee-way is ſuddenly diminiſhed, and is reduced to five or ſix degrees, and ſometimes leſs, if the rapidity of ſailing continues to increaſe; if, at the very time when the ſhip has acquired already a very great velocity, ſhe be kept away 12° or 15°, or even 22° 30′, without altering the ſails, their obliquity remaining the ſame, the ſhip ſhould then fall off in the ſame proportion, according to the opinion of thoſe who have written on the theory of the working of ſhips. This, notwithſtanding never happens; the velocity augments, becauſe the ſails then receive the wind with a greater ſine of incidence, and thereby acquire more power, while the bows continue to be ſtill ſhocked by the fluid in the ſame parts, and with the ſame ſine of incidence; ſo that the lee-way diminiſhes again, becauſe the water makes a greater reſiſtance from the increaſe of velocity; and that reſiſtance is greater on the ſhip's ſide than on her bows, which is leſs expoſed to the ſhock. Whence it muſt be concluded that the lee-way, in the ſame ſhip, does not depend alone on the diſpoſition of her ſails, and that in different ſhips it is always diſſimilar, from their not having the ſame form, or their ſails not trimming equally in the ſame oblique courſes; and becauſe, in ſhort, they have different velocities with the ſame weather, and under the ſame ſails. Which proves, in a word, that the lee-way is always in a proportion compounded of the velocity of the ſhip; of her form, which gives her more or leſs reſiſtance on her ſide than on the bows; and of her ſails, trimmed more or leſs obliquely.

To return to the conſideration of the action of the water on the bottom from A to B (*fig.* 18.), it muſt be remarked, that it acts forward, and that it muſt conſequently contribute very much to the tendency which almoſt all ſhips have to come to the wind, whenever the after-ſails are in the ſmalleſt degree more powerful than thoſe forward: for, the ſhock of the water is then a power which is to be added to that of the impulſe of the after-ſails, ſince this action of the fluid is ſo much the ſtronger as it acts before the center of gravity of the ſhip at the point M (*fig.* 18.), in impelling the fore part towards the wind, which always makes ſhips difficult to wear, becauſe all the effort A B of the water's reſiſtance upon the bows is oppoſed to this movement, in forcing this part to windward with a very great effort. It is not therefore to be wondered at when ſhips veer with difficulty or ſlowly, eſpecially ſuch as have a large cut-water; becauſe there are two forces acting one againſt the other, and the force which comes from the ſail muſt ſurmount (§ 18.) that which comes from the water; which will always eaſily happen, whenever, in ſuppreſſing ſome of the after-ſails, thoſe forwards ſhall be diſpoſed favourably enough to produce that effect; and when the rudder is uſed at the ſame time; the power of which is conſiderable, whether the ſhip goes a-head or a-ſtern rapidly. But if the ſhip, being abandoned to her own proper movements in an oblique courſe, had on a ſudden all her ſails ſuppreſſed, the veſſel would come to the wind, ſhould even the rudder never be uſed; becauſe the water, acting on the fore part of her bottom more on one ſide than the other, impels the head to windward againſt the ſmaller reſiſtance, until its power is entirely deſtroyed by the total ceſſation of the ſhip's velocity.

When the ſhip runs ſo large that the after-ſails becalm part of thoſe forward, this is again another reaſon for the ſhip having an inclination to come to the wind; for, the ſails forward receive a much leſs impulſe from the wind than in a courſe more oblique; becauſe the ſails abaft, by increaſing in their power, prevent thoſe forward from having as much wind as their ſurfaces would take, ſince all

the lee parts of theſe ſails become uſeleſs for the moment, being becalmed by the weather part of thoſe on the main maſt; ſo that the power of the ſails forward diminiſhes, while that of the after-ſails increaſes; for the ſine of incidence is greater. The ſhip ought then, for theſe reaſons, to have more inclination to come to the wind; but, regard muſt be paid to the direction of the power of the ſails in general, which now approaches nearer the direction of the keel: ſo that the greateſt part of their effort is in that direction, while their force in the lateral one diminiſhes.

It ſhould be farther obſerved, that when the ſhip has as much ſail as the weather will permit her to carry, that is the moment of the greateſt velocity of ſailing, providing that the ſails having at the ſame time received the moſt favourable diſpoſition, an exact equilibrium has alſo been placed between thoſe afore and thoſe aft, ſo that there ſhould be little occaſion for the uſe of the rudder.

APPLICATION.

48. One may readily diſcover, from what precedes, how to diſtinguiſh the degree of quickneſs with which different operations ought to be performed. For example, being obliged to run for a road-ſtead, the wind being large, and to let go an anchor as ſoon as come to it, it is evident this ought to be executed but under little ſail, which ſhould be all on the part before the center of gravity; becauſe, in the firſt place, a ſhip has always velocity enough when ſhe ſails large; ſecondly, becauſe ſhe is to overcome the effort A B (*fig.* 18.) of the water which oppoſes her movement. If, on the contrary, being obliged to come to the wind in anchoring, as many ſails as can conveniently be managed at that moment may be ſet, becauſe that movement of the ſhip is always very quick, and as ſoon as the ſails are taken a-back, the rapidity of the ſhip's way diminiſhes, and in a few moments entirely ceaſes, whereas it always augments when the ſhip falls off.

ARTICLE I.

REMARKS ON THE EFFECT OF THE MAIN-SAIL.

49. IN the uſe of the ſails, attention ſhould be paid to the effect of the main-ſail, which perhaps may not be that of bringing the ſhip to the wind; for, if the ſhip be too much loaded a-ſtern, the center of gravity H (*fig.* 18.) of the ſhip might be abaft the main-maſt, and then the direction of the effort of that ſail, quitting the point C before the center of gravity, ought to make the ſhip fall off in lieu of keeping her up to the wind. But, for this to happen, the ſhip muſt be either very ill conſtructed, or very badly loaded; or, in ſhort, there muſt be great error in the poſition of her maſts. Notwithſtanding the main-ſail may always be made to aſſiſt the ſhip in veering, though the center of gravity H be (as it is almoſt always) before the effort C of the main-ſail; yet, to do it, the effect of that ſail need only be changed, by making it to paſs before the center of gravity of the ſhip: which will ſuddenly happen, if, when cloſe hauled, the main ſheet be let go a-main, becauſe the weather part of the ſail being fixed forward by the tack, its effect is likewiſe before the center of gravity of the ſhip, though it has loſt in that part much of its power, in becoming leſs expoſed to the impulſe of the wind; while the lee part, bellying out more, can receive a great impulſion of the wind, which will ſtrike it more and more perpendicularly as the ſhip falls off with more and more rapidity. In this caſe, it may happen, that if the direction of the effort C G of the main-ſail do

not paſs before the center of gravity H of the ſhip, it comes ſo near that point, that it may be ſaid to have no longer the effect of an after-ſail.

ARTICLE II.

OF THE RUDDER.

50. THE rudder is a machine known to all the marine world; it is ſupported by the ſtern-poſt, to which it is affixed by braces and pintles, which operate as hinges. It acts by means of a lever, called a tiller, which enters nearly horizontally into the ſhip, paſſing under the upper or middle deck tranſom; ſo that if, inſtead of leaving the rudder exactly in a right line with the keel, and as it were a prolongation of it, it be turned to one ſide or the other, as B D (*fig.* 19.), it receives an immediate ſhock from the water which glides along the ſhip's bottom, in running aft from A to B; and this fluid impels it towards the oppoſite ſide, while it continues in that ſituation, ſo that the ſtern, to which the rudder is confined, receives the ſame movement; and, the ſhip receiving an impulſe ſideways, her ſtern turns accordingly from B to *b*, on any point whatever C (§ 18.), while her head paſſes from A to *a*. It muſt be obſerved, that the water ſtrikes the rudder obliquely, and only with that part of its motion which acts according to the ſine of incidence, in impelling it in the direction N P with a force which depends not only on the rapidity of ſailing, but alſo on the greatneſs of the ſine of incidence: a force which is conſequently in the compound ratio of the ſquare of the greater or leſs velocity of the ſhip's motion, and of the ſquare of the larger or ſmaller ſine of incidence, which depends upon various circumſtances. So that, if the veſſel runs three or four times more ſwiftly, the abſolute ſhock of the water upon the rudder will be nine or ſixteen times ſtronger under the ſame angle of incidence, and will be augmented in a greater proportion, if the ſine of incidence be increaſed. This impulſion, or, what is the ſame, the power of the helm, is always very feeble, when it is compared with the whole weight of the veſſel; but it acts with a very long arm of a lever, which occaſions it to work very advantageouſly in turning the ſhip; for the helm is fixed at a very great diſtance from the center of gravity G, as well as from the point C, upon which the ſhip is ſuppoſed to turn, with reſpect to the point of percuſſion R: and if the direction P N of the impreſſion of the water upon the rudder be prolonged, it is evident that it will paſs perpendicularly at the point R, widely diſtant from the center of gravity G; therefore the abſolute effort of the water is very powerful. It is not therefore ſurpriſing, that this machine impreſſes the ſhip with a conſiderable circular movement, by forcing the ſtern from B to *b*, and the head from A to *a*, and even much farther, when the velocity of the ſhip is preſerved; becauſe the effect of the helm always keeps pace with the rapidity of the ſhip's way.

51. Amongſt all the obliquities which may be given to the rudder, there is one ſituation which is more favourable than any of the others, to make it produce with more rapidity the effect of turning the ſhip, in order to change her courſe. To be convinced of this, we have only to conſider that, if the obtuſe angle A B D (*fig.* 19.) were to be leſſened, the impulſe of the water on the rudder would augment, at the ſame time that it would more oppoſe the ſailing of the ſhip, ſince the angle of incidence would be more open, and would preſent a greater ſurface (§ 7.) to the ſhock of the water, by oppoſing its paſſage more perpendicularly: but then the direction N P of the effort of the helm upon the ſhip would paſs at a ſmaller diſtance from the center of gra-

vity G towards R, and would leſs approach the perpendicular N L, according to which, it is abſolutely neceſſary that the power ſhould act with greater effect to turn the ſhip. Therefore, it is evident that, if the obtuſe angle A B D were too much leſſened, the greater ſhock of the water could not counterbalance the loſs occaſioned by the diſtance between the direction N P and N L, or by the great obliquity which would be given to the ſame direction N P of the abſolute effort of the helm with the keel A B. If, on the other hand, the angle A B D were made more obtuſe, the direction N P of the effort of the rudder would become more advantageous to turn the ſhip, ſince it would approach more the perpendicular N L, and ſince the prolongation of N P would augment G R, by paſſing at a greater diſtance from the center of gravity G. But the rudder would then be ſtruck too obliquely; for the angle of incidence would be more acute; ſo that it would only preſent a ſmall part of its breadth to the ſhock of the water, and would of courſe receive but a faint impulſion. All this proves that the greateſt diſtance G R from the center of gravity G will not counterbalance the too great obliquity of the ſhock of the water. Whence it muſt be concluded, that when the water ſtrikes the rudder too obliquely or too perpendicularly, a great deal of the impulſion, or of the effect it ſhould produce, is loſt. Therefore, between theſe two extremes, there is a middle poſition, which muſt be the moſt favourable.

52. The diagonal N P of the rectangle I L (*fig.* 19.) repreſents the abſolute direction of the effort of the water upon the rudder: N I expreſſes the portion of this effort which oppoſes the ſhip's head-way, or which forces her a-ſtern in the direction of the keel. It is eaſy to perceive that this portion N I of the whole power of the helm contributes little to turn the veſſel; for, if I N were prolonged, it would be ſeen that its direction paſſes at a very ſmall diſtance G V from the center of gravity G, and that the arm of the lever B N=G V, to which the force is as it were affixed, is at moſt equal only to one half of the breadth of the rudder. But, it is not ſo with reſpect to the relative force N L, which acts perpendicularly to the keel. If the firſt force N I is almoſt uſeleſs, and even hurtful, by retarding the velocity; the ſecond N L is capable of a very great effect, ſince it is applied at a great diſtance from the center of gravity G of the ſhip, and acts on the arm of a lever G E, which is very long. Thus, it appears, that, between the two effects N L and N I, which reſult from the abſolute effort N P, there is one which is always oppoſing the ſhip's head-way, contributing but little therefore to the motion of her turning; whilſt the other alone produces that movement of evolution, without retarding her velocity.

53. Geometricians have determined the moſt advantageous angle made by the helm with a line prolonged from the keel, and fixed it at 54° 44′, on a preſumption that the ſhip is not wider at her floating line than at her keel. But, as that ſuppoſition is abſolutely falſe, ſince all veſſels augment their breadth from the keel upwards to the extreme breadth where the floating line, or higheſt water-line, is terminated; it follows, that this angle is too large by a certain number of degrees. For the rudder is ſhocked by the water, at the height of the floating line, more perpendicularly than at the keel, ſince the fluid exactly follows the outlines of the bottom: ſo that one could almoſt ſay, that a particular poſition of the helm might be required for each different ſine of incidence upwards from the keel. But, as a middle poſition may be taken between all thoſe points, we need only conſider the angle formed by the ſides of the ſhip and her axis at the higheſt water-line, in order to determine afterwards the middle point, and the middle angle of incidence. It appears, from Mr. Bouguer's *Traite de la Manœuvre*, Sect. I. Liv. II. that, in moſt ſhips, the angle of the rudder with the prolonged line of the keel ſhould be made to be 46° 40′. Without following the

calculations of that able geometrician, we ſhall perhaps be able to explain what he has diſcuſſed in a more abſtruſe manner.

54. When it is required to turn the ſhip by means of the rudder, and, at the ſame time, keeping the head-way as much as poſſible, it is evident that the angle 54° 44′, which ſome have determined to be the moſt favourable with the line of the keel prolonged, is in that caſe too open; becauſe the water ſtrikes the rudder with too great a ſine of incidence, and which is equal to that of the angle which it makes with the line prolonged from the keel below. Above, the ſhock of the water is almoſt perpendicular to the rudder, on account of the width of the ſhip's ſides, as has been ſhewn before. But if the rudder oppoſes the fluid by making only with the line prolonged from the keel an angle of 45° 1′, the impulſe, by becoming weaker will be leſs oppoſed to the ſhip's head-way; and the direction N P (*fig.* 19.) of the abſolute effort of the water on the rudder, approaching nearer to the lateral perpendicular N L, will be more advantageouſly placed; ſince the prolongation of the abſolute effort paſſes at a greater diſtance G R from the center of gravity G. On the other hand, experience every day ſhows us that ſhips ſteer well, when they do not even make the angle D B E more than 35°. If this angle be made 45°, as we require it, and then we ſhould diſcompoſe the abſolute effort N P, we have the ſide N I equal to the other ſide N L of the ſame ſquare; ſo that the part of the total power which oppoſes the head-way is only equal, in this caſe, to that which produces the movement of rotation: inſtead of which, if D B E were 54° 44′, N I would become much greater than N L, in proportion to the ſines of the angles which are oppoſed to them in the triangles P I N or P L N, and the ſhip would conſequently loſe much more of her velocity than in the firſt ſituation of the rudder, to which we ſhall confine ourſelves, as being that which is beſt adapted to the generality of veſſels, but which nevertheleſs muſt be occaſionally altered, according as they ſhall make an angle more or leſs open with their ſides a-ſtern.*

The angle of the rudder with the keel may always be determined with ſufficient preciſion, by obſerving the rule we have preſcribed (§ 28.) for the determination of the angle of the ſails.

55. As the water often ſtrikes the rudder with a very great force, the tiller has a certain length, in order to leſſen the labour of the helmſman.

But, to lighten his labour ſtill more, there is in moſt ſhips, on the quarter-deck, directly over the extremity of the tiller,, a vertical wheel (*fig.* 19.) which has the effect of a capſtern, and which is connected with the tiller by means of ropes and blocks (See Practice of Rigging). So that, if the wheel be turned either one way or the other, the extremity of the tiller approaches towards one of the ſides of the ſhip, and expoſes the rudder to the ſhock of the fluid.

56. The longer a lever is, the more effect it has when it acts with the ſame power: therefore, the longer the ſpokes of the wheel are, in proportion to the radius of the cylinder round which the tiller rope is wound, the more advantage the helmſman will have; for, if the ſpokes of the wheel be three or four times longer than the radius of the cylinder, the helmſman will act with three or four times more force, ſince he works on a lever which is three or four times longer than the radius of the cylinder, the extremity of which is ſuppoſed to be the fulcrum of the lever on which he works. So that, if he employs a force of 30 pounds weight, he will produce an effect of 90 or 120 pounds, by the diſpoſition of the wheel alone. On the other hand, the impulſe of the water is collected in the middle of the rudder's breadth, which is very narrow, compared with the length of the tiller; therefore, the effort of the water is very little diſtant from the point of ſupport B upon which it turns: whereas the tiller forms the arm of a lever 10 or 15 times longer, which ſtill increaſes the power of

* It may be taken as a general poſition that the moſt advantageous angle will always be formed between 35° and 45°.

the helmſman in a ſimilar proportion to that which exiſts between the length of the tiller and that of the lever on which the impulſe of the water acts. This force is therefore 10 or 15 times ſtronger; and the effort of 30 pounds, which before gave the helmſman a power of 90 or 120 pounds, will become one of 900 or 1800 pounds on the rudder. This advantage proceeds from the water's acting on a very ſhort arm of a lever, while the helmſman works on one very powerful, in compariſon; and, becauſe this lever is moved by a wheel which multiplies its force. This demonſtration ought to remove all ſurpriſe at the prodigious effect of the rudder, when its mechaniſm is not attended to; for we have only to conſider the preſſure of the water, which acts at a very great diſtance from the center of gravity G of the ſhip, as well as from the point C upon which ſhe is ſuppoſed to turn (§ 15.) and there will eaſily be perceived the difference which exiſts between the effort of the water againſt the helmſman, and the effect of that ſame impulſion againſt the ſhip. With reſpect to the helmſman, the water acts with the arm of a lever N B very ſhort, of which B is the fulcrum: on the contrary, with reſpect to the ſhip, the impulſe of the water is exerted in a direction N P, which paſſes perpendicularly at a very great diſtance from the center of gravity G, in acting on a very long lever E G, which renders the action of the rudder very powerful in turning the ſhip: ſo that, if in a large ſhip, the rudder receives an impulſe from the water 2700 or 2800 pounds (as very often happens provided that the ſhip ſail at the rate of 9 or 12 knots, and that this power, applied at E, be 100 or 110 feet from the center of gravity G) it will act upon the veſſel, to turn her, with a power equal to 270,000 or 308,000 pounds, while the helmſman need not act with a greater power than 30 pounds on the ſpokes of the wheel.

57. It is proper to remark, that the great length which is given to the tiller, in order to facilitate the work of the helmſman, is an obſtacle to the play of the rudder; ſince that length hinders its preſenting itſelf ſufficiently to the ſhock of the water to produce all the effect which might attend it. For, this inconvenience does not, in moſt ſhips, allow the angle D B E (*fig.* 19) to be more open than 30°; whereas it ſhould be 45° as we have before ſhewn. But, as this moſt favourable determination has not yet come into uſe, and the coarſe dimenſions commonly given the tiller have always been followed, we ſhall endeavour to propoſe ſomething better for practice.

It muſt be conſidered, that if the tiller were ſhorter, the rudder would have more play, becauſe its extremity, in deſcribing the arc of a ſmaller circle, would occaſion the rudder to make an angle more open, with the keel prolonged: and this new augmentation would be ſo much the more advantageous, as it would approach nearer to the angle of 45°. And as, in all ſhips, the length of the tiller might certainly be cut a fifth ſhorter, or perhaps more, it is evident that, thereby, the angle of the rudder and the keel prolonged might be rendered very near 45°, which would increaſe its force in a proportion of nearly 3 to 5, ſince the ſquare of the ſine of incidence of 45° is to the ſquare of the ſine of incidence of 30° : : 5 : 3, or thereabouts. This augmentation of the impulſe is often of the greateſt importance, eſpecially when ſhips are of a large ſize, as their motions are but ſlow on account of their length.

If the tiller be ſhortened, the helmſman will be obliged to employ more force in proportion to the length taken from the lever on which he works: but this loſs may be repaired by the facility with which the helm will be handled, if the diameter of the cylinder of the wheel be conſiderably leſſened, augmenting at the ſame time the length of its axis, without diminiſhing that of its ſpokes, which ought on the contrary to be lengthened as much as poſſible, and two more turns of the tiller rope ſhould be wound round the barrel.

Theſe forces would be ſtill multiplied, if two ſheaves were fixed in the end of the tiller, in two mortiſes which might be made for that purpoſe, and which might work on an iron pin paſſing

through their centers, taking care to have the end of the tiller ſtoutly hooped with iron, in order to ſtrengthen it; then the tiller rope might be reeved through the blocks which are for that purpoſe on each ſide the ſhip, thence through the two ſheaves at the end of the tiller, and the ſtanding part to be affixed cloſe to the blocks on each ſide. By theſe means nothing would be loſt with reſpect to the force; becauſe if the lever be ſhorter, the forces which cauſe its action are likewiſe multiplied in proportion.

58. After what has been ſaid reſpecting the helm, it is eaſy to conceive, that the greater the ſhip's velocity is, the more powerful is the action of the rudder, ſince it acts againſt the water with a force which increaſes as the ſquare of the velocity of the fluid (§ 3.) whether the ſhip has head-way, or ſtern-way; obſerving always, that in theſe two circumſtances the effects are contrary; for, if the ſhip goes a-ſtern, the rudder will be ſtruck from I to N (*fig.* 19.); and, inſtead of being puſhed from N to P, it will be ſo from N to R; ſo that the ſtern being moved in the ſame direction, the head will take a contrary one, and move towards the ſame ſide as the tiller B F.

59. It ſhould be obſerved, in the uſe of the rudder, that there is one part of its effort which impedes the ſhip's ſailing when it is ſtruck by the water which runs rapidly along the ſhip's bottom. If it makes an angle of 45° with the keel prolonged, it receives only half the impulſion it would if acted upon perpendicularly; becauſe the abſolute impulſe diminiſhes from two cauſes: (§ 7.) The ſurface which oppoſes the ſhock of the water is reduced to a leſs extent than it was at firſt, and the angle of incidence diminiſhes likewiſe: ſo that by this, the impulſe has diminiſhed one half. Conſidering next, that the impulſion N P, which remains (*fig.* 19.) it will appear that there is only one part N I which is oppoſed to the ſailing (§ 54), and which is leſs than N P in the proportion as the ſine total is to the ſine of 45° the meaſure of the angle of incidence V N B equal to N P I; for the angle V N L is right, as well as the angle P N B; ſo that, if you take away the common angle L N B, the two angles P N L and V N B will remain equal between themſelves; but, as the angle I P N is equal to its alternate angle P N L, it follows that I P N is always equal to V N B, whether the angle made by the rudder be more or leſs open with the keel prolonged. So that, if the ſurface of the rudder which receives the ſhock be 80 feet ſquare ſuperficies, it will firſt be reduced, by its being expoſed to the courſe of the fluid, to an effort of 40 feet ſurface, then to 28 or 29, becauſe, in the firſt place, there is only one part of the velocity of the water which contributes to the ſhock, and that is proportional to the relation of the ſquare of the ſine total to that of the ſine of incidence; and, ſecondly, becauſe out of the abſolute impulſe N P, which reſults from this laſt oblique ſhock, there is only a part N I which oppoſes the velocity of the ſhip proportional to the abſolute N P, in the ſame relation as there is between the ſine total and the ſine of incidence; that is to ſay, that when the rudder makes, in the largeſt ſhips an angle of 45° it impedes the ſhip's rapidity of ſailing, in the direction of the keel, with an effort N I equivalent to the impulſion which a ſurface of 28 or 29 feet ſquare might receive if it were expoſed perpendicularly to the ſhock of the water. So that, if the ſhip ſails 12 knots an hour, or 19 feet a ſecond, the effort of the rudder N I, which oppoſes the ſhip's way, will be 12,499 or 12,945 pounds; ſalt water weighing $\frac{1}{37}$th more than freſh.

60. It follows, from all that has been ſaid of the rudder, that it ought to be employed as little as poſſible; that is to ſay, the ſhip and her ſails ought to be ſo diſpoſed, that the ſmalleſt motion of this machine may bring her to her courſe, if ſhe deviates from it, or make her perform any evolution which may be thought proper.

ARTICLE III.

THE TIME EMPLOYED BY DIFFERENT VESSELS TO PERFORM THE SAME EVOLUTION, IS PROPORTIONED TO THEIR LENGTHS.

61. ALL that ſerves to produce motion in ſhips, has more force in large than in ſmall ones; but the difficulty which large ſhips have to receive the motion, is greater, in a greater proportion, than that which oppoſes the motion of ſmall ſhips. For, if the dimenſions and machines which compoſe a large veſſel, are twice as large as thoſe which conſtitute a ſmall one, (ſolidities being in ratio of their cubes,) the firſt will be eight times as great. Yet the obſtacle which the large will oppoſe to its being put in motion will be two and thirty times as great as that of the ſmall one. For, if both ſhips were conſidered as divided into an equal number of vertical ſections, thoſe of the large would appear to have four times as much ſurface as thoſe of the ſmall, beſides that they would be twice as thick, ſince the dimenſions are in general twice as large; conſequently they will have eight times the ſolidity; which anſwers already to the relative effort of the rudder and ſails.

Further, the parts of the large ſhip are twice as diſtant from the center of gravity as thoſe of the ſmall one, ſince thoſe diſtances are proportional to the other ſimple dimenſions of the two ſhips. So that if the evolution be ſuppoſed of the ſame number of degrees, the ſtern and head of the large ſhip will have to deſcribe arcs twice as large as the ſmall one; and this greater velocity being multiplied by the ſolidity of the parts of the large ſhip, which is eight times as great as that of the ſmall one, the product will give 16 times more motion; the reſiſtance will act conſequently 16 times as much on the large as on the ſmall; and as that reſiſtance operates on the arm of a lever twice as long, the total reſiſtance of the large ſhip will be 32 times as great. Thence it follows, that if the forces which act on the large ſhip be augmented only in proportion to her ſolidity, ſhe will have ſtill four times more difficulty than the ſmall one to get into motion: and therefore the large ſhip, inſtead of making in the ſame time an angle of rotation as great as the ſmall one, will only make an angle of one fourth, or three times leſs. Now, that the great ſhip ſhould deſcribe an angle of rotation equal to the other veſſel, it will require only thrice as much time: but that angle, or the velocity with which the ſhip obeys the impulſe of her rudder and ſails, will follow the laws of acceleration, ſince the velocity acquired in the firſt inſtant is continually augmenting in arithmetical progreſſion; ſo that the time which ſimilar veſſels of different ſizes take in performing the ſame evolution, will be in proportion to their lengths. But the heavier body parts with its velocity not ſo readily as the lighter body, becauſe the reſiſtance of the maſs is greater, being three times heavier than that of the ſmall ſhip; which being moved with thrice the facility, is alſo brought to reſt with the ſame degree of eaſe. So that, if a veſſel 100 feet long takes four minutes to perform an evolution, a ſimilar veſſel of 150 feet will take ſix minutes or thereabouts to perform the ſame circular movement. For as 100: 150: : 4: 6.

CHAPTER VII.

OF THE HEIGHT OF MASTS.

THE correct height for the masts of ships is still a problem which remains to be solved for the builders. The most skilful of them have not paid attention enough to the solutions and determinations which are contained in the Works of the late Mr. BOUGUER on that subject. It seems, on the contrary, as if they had endeavoured to deviate, as much as possible, from the true principles in that respect, by raising the masts a great deal more than they were formerly, although they were already much too high, as the learned Author I have just mentioned has asserted. An experience, confirmed by repeated observations, has convinced me of this truth; viz. that "as soon as a ship inclines, her velocity diminishes in proportion as her inclination increases." This principle has been verified on different vessels, and at different times by several officers; and in various oblique courses. I had no share in those various experiments, and therefore cannot be suspected of partiality: but, as they have always proved, to those who have made them, that the present mode of masting is generally too high, I will not hesitate a moment longer to deliver here an epitome of my own experiments on that subject.*

Having all the sails out, and being hurried on by a strong gale, I have ordered all the top-gallant-sails, the studding and stay sails, to be taken in, without the ship losing the least perceptible degree of her velocity; nay, I have seen it sometimes to increase by a twentieth, and that at a time when the ship ran already at the rate of nine or twelve knots an hour.

These trials, which I have made with care, and which were performed so quickly, that the wind should not have time to increase or diminish in strength, are sufficient to prove the necessity of lowering the center of effort of the sails in general, and consequently all the masts. These experiments have been repeated in augmenting the number of sails, sometimes at the risque of fatiguing the masts; and it has always been found that the velocity did not increase, when the ship was more inclined; but that she laboured more and more in all her parts, as her movements became stronger and the concussions of her pitchings rougher, although the sea was not more swelled. At other times, when the ship inclined pretty much, though the wind was not quite strong enough to hurt the masts, I have lessened the number of sails; and it happened that the ship, after that suppression of the top-sails, was easier in her movements, steered better, and was, in short; more quiet, though the swells of the sea were still the same; an attention which must not be neglected in these kinds of observations, which should be often repeated before a positive decision. However, we do not recommend any diminution in the surface of the sails, in lessening their height: but, it will often happen that we shall rather recommend to increase it upon the whole. For that which is lost in height, may be regained by the width. There will even result, from that operation, another advantage: the top-sails, by this reform, being shorter and, thereby, proportionally wider than the lower sails, will be more easily cut to their shape; and their sides being formed with lines exactly strait, the sail will be the more tight, by which a much greater effect on the ship will be produced. The masts being shorter, and the sails

* We have thought it proper to give the reasoning of M. Bourdé upon this subject, although the practice of high-masting prevails in the British Navy.

wider, with leſs fall, the ſurface will be the ſame: but the effort of that ſurface will, with the ſame wind, act on ſhorter levers, the fulcrum of which will not be altered; therefore, it will operate at a ſhorter diſtance from that fulcrum; and therefore much leſs will be the power which makes the ſhip incline: and the ſhip, being more upright, will ſail with more velocity, becauſe her water-lines will be then more advantageous than when ſhe heels. On the other hand, the ſails being leſs inclined, they preſent a wider ſurface to, and receive a ſtronger impulſion from, the wind; an advantage which muſt always produce an increaſe of ſwiftneſs and a decreaſe of driſt. Add to this the real advantages of trimming the ſails better, of working them with more eaſe, of rendering the maſting in general more ſolid, and more capable of reſiſtance in bad weather, as well as in battle.

But, how muſt we determine the height for the maſts? or, in other words, how much they are to be ſhortened? The *Treatiſes on the perfect maſting and working of ſhips, by M.* BOUGUER, teach us that method. It is from thoſe Treatiſes I have imbibed the notions of my principles on that ſubject. But, in order to give a previous idea of that inquiry, and to engage the builders and ſeamen to bring to perfection this part both of the building and working of ſhips; upon which, almoſt as much as from their bottom, their ſteerage undoubtedly depends, I will ſubjoin here what M. BRUE, a learned and ſtudious Officer, made me conceive on that ſubject.

" That maſting," ſaid he, " is abſolutely perfect, when the center of effort of the ſails is preciſely oppoſite to, or at the ſame height as, or parallel with, the *point-veliqua*. What is the *point-velique?* It is that point in a perpendicular, (raiſed from the center of gravity of the horizontal ſurface of the ſhip at the floating line,) which is interſected by the direction of the abſolute impulſe of the ſea on the head of the veſſel. This is the *point-velique* in direct courſes."

It is clear; no great effort of imagination is neceſſary to conceive this principle, which appears ſo evident, that it may be ſurpriſing why it has not yet been made uſe of. For this *point* once known, the center of effort of the ſails will be ſo too; and their right height, as well as that of the maſts, will be determined. A little more calculation, and an attention to the plan of the ſhip will be neceſſary, in order to find out that abſolute direction of the effort of the impulſion of the water on the bows. But that ſhould not prevent the enquiry. On the contrary, it ſhould be an additional inducement to thoſe who, building ſuch good veſſels as we are now poſſeſſed of, and which might ſtill be of a more advantageous form, will be deſirous to make them more perfect, by maſting them more advantageouſly. This would undoubtedly be the caſe; for ſeveral veſſels have had their maſts cut ſhorter, and the practice has been attended with decided ſucceſs. Theſe facts, which could be atteſted by many able ſeamen, will always ſpeak highly in favour of this principle; although, when that ſhortening was made, the ſails were not widened in proportion.

" But," continues M. BRUE, " in carrying this inquiry farther than it ever was, the interſection of the two above-mentioned lines, (viz. that of the abſolute impulſe of the water on the bows, and that of the perpendicular at the center of gravity of the ſurface of the floating line of the ſhip,) cannot take place unleſs in a direct courſe; and, as ſoon as the courſe becomes oblique, they no longer meet. The center of gravity of the floating line's ſurface of the ſhip paſſes to the leeward of its axis, on account of the inclination which always occurs in that ſort of courſe; and the direction of the ſhock of the fluid, which then takes its origin a little to leeward alſo of the bow, paſſes, in its prolongation, to windward, without meeting the perpendicular at the center of gravity of the floating line's ſurface;" (which is eaſily conceived, if we repreſent to our imagination the horizontal edge of that floating line's ſurface but ever ſo little inclined;) " whence it reſults that

" no *point-velique* will be found in any courſe but a direct one: which is true; unleſs we could fancy " ſuch a ſhip as would neither drive nor incline in an oblique courſe: but that is not poſſible; and " hence no perfect mode of maſting could be diſcovered in the laſt caſe of the oblique courſe."

This is true, ſtrictly ſpeaking: for, in each inſtant of a courſe a different point of the bow is ſtruck by the water; which is owing to the pitching of the ſhip, the continual variations in the ſtrength of the wind, and the greater or ſmaller inclination produced by the rolling motion of the ſhip.

" But," ſays again M. Brue, " the *point-velique*, relative to theſe various circumſtances, varies " therefore in the proportion of the almoſt infinite variety of thoſe circumſtances, which accompany " the courſe of a ſhip, that is to ſay, according to all the degrees of drift, all the degrees of inclina- " tion on either board, forward or abaft; as many times, in ſhort, as there are new points of the " bow either ſtruck, or no longer ſtruck, the *point-velique* aſcends or deſcends.

" I paſs over the minute examination I could make of each particular cauſe which contributes to " lower that *point* from its utmoſt height, which is in the direct courſe, to its loweſt, which takes " place in the moſt oblique courſe, accompanied with the greateſt lateral inclination of the ſhip: and " there is no method to get out of that common road which is purſued in determining the " dimenſions of the maſts, but that of attending to the following conſiderations; viz. Such a ſhip " being intended for ſuch a latitude, the wind ſhe is moſt commonly to expect there, will be nearly " of ſuch a ſtrength, and generally oblique to her courſe by ſo many degrees: ſo that her moſt com- " mon drift will be nearly ſo many degrees, and her lateral inclination ſo many, &c. To give her, " therefore, the moſt ſuitable maſting, making her relatively perfect, we muſt ſeek for her *point-velique* " in what ſituation we ſhall think moſt convenient, and there place the center of effort of her " ſails."

All this reaſoning tends evidently to the ſhortening of all the maſts, and proves the neceſſity of doing it, at the ſame time as it determines their height. The moſt difficult point, in that operation, is to find out the direction of the abſolute impulſion of the water on the bows, when the ſhip ſteers a courſe cloſe hauled and one with the wind on the beam, with ſuch an inclination as the ſhip could be ſuppoſed to have in either of theſe two courſes; when the wind would allow to have four ſquare-ſails ſet, together with the mizen top-ſail. Conſidering theſe two ſuppoſitions of the wind on the beam, and cloſe hauled, it will be eaſy to determine the height of the maſts proper for that double ſituation; becauſe, if the gale blows harder, one may leſſen the number of ſails; if weaker, one may increaſe it by adding ſtay-ſails, top-gallant ſails, jib, &c: if the wind gets more aft, then the ſurface of the ſails may be increaſed again by adding the ſtudding and top-gallant royal ſails: finally, it is very clear that top-gallant and top-gallant royal ſails will always be of ſervice when the center of effort of the ſails ſhould aſcend.

CHAPTER VIII.

OBSERVATIONS ON THE DIFFERENT INCLINATIONS GIVEN TO THE MASTING OF SHIPS, WITH RESPECT TO THE WATER-LINE.

THE maſts are hardly ever ſtepped in the ſame manner in all ſhips. This, too, is one of thoſe things which are rather regulated by cuſtom than reaſon. Some will have them perpendicular, while others chuſe to have them rake forward, and others aft. Each party bring, to ſupport their opinion, reaſons drawn from ſome experiments which chance has ſometimes rendered ſpecious.

In this reſpect, we ſhould rely on the judgement of the builder, who ought to know the qualities of his ſhip even before he puts her on the ſtocks. If one has not an opportunity of taking directly from him the neceſſary inſtructions, it is proper to obſerve that, if the maſts are made to rake forward, the direction of effort of the ſails will be inclined towards the bottom, obliquely with the horizon; which will conſequently make the head of the ſhip plunge whenever they receive a ſtrong impulſe from the wind; and this may diminiſh the head-way of the ſhip, while it increaſes the celerity of the pitching: the ſails alſo will be with more difficulty trimmed, eſpecially when cloſe hauled, ſince the bracing of the yards will be more confined. Therefore, the only advantage which can be drawn from this oblique maſting of ſhips, is only to render the ſhips more ready to fall off.

If the maſts are perpendicular the direction of effort of the ſails will be horizontal, always ſuppoſing the ſhip to be in an upright poſition. Therefore, this effort not being diſcompoſed, it will preſerve a much greater action, and the ſhip will ſail with the greateſt velocity ſhe is capable of.

If the maſts rake aft, the ſhip will be more ready to come to the wind, becauſe the ſails will be a little more aft: theſe will alſo be more eaſy to trim ſharp becauſe the braces will not be ſo much confined. As this poſition of the ſails will raiſe obliquely above the horizon the direction of the effort on the ſhip, it follows that, by their power, the ſhip will be eaſed away from the water: for, it is certain that ſhe will not prolong her courſe, unleſs ſhe heels too much; therefore, ſhe will riſe more lightly over the waves, pitch leſs, keep better the wind, and tack quicker. This is nearly all that can be ſaid in reſpect to practiſe.

CHAPTER IX.

OF THE TENSION OF SAILS, AND THEIR TENDENCY TO FIX THEMSELVES PERPENDICULARLY TO THE DIRECTION OF THE WIND.

I. IT is clear that ſails are never perfectly flat. But every one is not perſuaded that the more extended is the ſail, the greater impulſion it receives from the wind, which ſtrikes it perpendicularly, and the more effectually, of courſe, the ſail acts on the veſſel. It is aſtoniſhing that any ſeamen ſhould be of opinion that a bag muſt be left at the foot of the ſail, to lodge the wind in. A hauled-

down top-ſail has as much cloth diſplayed in it as when hoiſted up and well extended. It forms then, by its convexity, a conſiderable kind of bag, in which the wind may play at eaſe; and it is obſerved that the rapidity of the ſailing decreaſes very much; whence we muſt neceſſarily conclude, that the impulſe of the wind muſt have greatly diminiſhed, ſince the ſail produces no longer the ſame effect upon the veſſel. To know demonſtratively the cauſe of that diminution in the impulſe of the wind, we have only to pay attention to the air which acts againſt the foot and the head of the ſail; for that part of the wind, which ſtrikes at the head, makes an effort to re-act towards the foot againſt that which, having ſtruck at the ſame inſtant at the foot, endeavours to re-act towards the head. From this ſhock reſults (though the air eſcapes at each ſide) a compreſſion in the ſail. But, after having acted inwardly in the ſame manner as if it were ſhut up, it finds itſelf more and more compreſſed by that which ſucceeds to the firſt; and, though it eſcapes by the ſides, it is evident that it tries to extend, and that it impels conſequently with an equal power, all the parts of the ſail perpendicularly; and this is the cauſe of the ſail taking the form of a circle's arc. Therefore the ſail will produce no greater effect than if it had no greater height than the ſpace contained between the two yards: it may not even, ſtrictly ſpeaking, have that whole effect; for, that ſort of whirlwind, which is made in the center, by the re-action of the wind which ſtrikes the upper and lower parts, cannot fail to diminiſh the ſhock of thoſe particles, which ſucceeding the former, would have ſtruck the ſail with all their primitive power; inſtead of which, this power is now almoſt intirely deſtroyed by this barrier which oppoſes for a while their paſſage. To which may be added, that the ſail having the form of the arc of a circle, very little wind can ſtrike it perpendicularly; and that it muſt, of courſe, have much leſs effect than another ſail, of the ſame height and width, which ſhould be very exactly ſtretched out.

The ſails of a ſhip ſhould be cut in ſuch a form, as to preſent as flat a ſurface as poſſible.

II. The center of effort of the impulſe of the wind upon the ſails, expoſed perpendicularly to the courſe of the wind, anſwers exactly to the center of gravity of the ſurface, ſtruck in that direct ſituation. But, as ſoon as it is preſented obliquely to the courſe of the fluid, and kept ſo, the center of effort of the total impulſe will paſs on the weather ſide of its center of gravity; becauſe the particles of air which at firſt met the ſurface, have been re-acted, and by that re-action, they ſtop part of the paſſage to the ſucceeding ones, which diminiſhes of courſe both the ſtrength of the ſhock and the impulſe they would have communicated to the ſail, if their movement had not been interrupted. But, this deviation of re-action in the firſt particles of air which have ſtruck, is repeated afterwards. For, all thoſe which ſucceed them while the ſurface is kept obliquely to the wind, continue to re-act to leeward: ſo that, from the firſt vertical line (taken from the windward ſide) out of all thoſe which form together the ſurface, there is a continual ſeries of obſtacles which change the ſhock of immediate and ſucceeding particles, and which alters it ſo much the more as they ought to ſtrike the parts of the ſail moſt to leeward, and ſo much the leſs as they will ſtrike thoſe which are moſt to windward. Therefore, the leeward ſide of ſails, obliquely expoſed to the wind, is always leſs ſtruck than that which ſtands to windward. Whence it reſults that the center of effort of the abſolute impulſe of the wind on the ſail, is lodged in the weather ſide of the ſail, (for it is ſuppoſed to be equally divided in two,) ſince that is the part which receives more impulſion. Therefore, the center of effort is alſo to windward of the center of gravity of the ſurface; and the removal of this center of effort towards the wind, is in proportion to the impulſe received on the weather ſide of the ſail, and that received on the lee ſide. The truth of this aſſertion is continually demonſtrated by daily experience of ſhips at ſea. The ſails are carried by the yards and by the maſts, which divide them perpendicularly into two equal parts, from top to bottom, through their center of gravity. When, being placed obliquely to the wind, they are left at liberty, without being confined by their braces or bowlines, they immediately range themſelves

perpendicularly to the courſe of the wind, becauſe their weather ſide receives more impulſe than the lee ſide; and there they remain conſtantly, unleſs their poſition be altered; becauſe all their parts are ſtruck equally, and an equilibrium is kept among them; for, the power of the wind, whether it increaſes or decreaſes, acts always the ſame on them all.

This proof, which ſhews the difference between the center of gravity and the center of effort in the ſails, requires much attention in the uſe of that knowledge in practice. For example, in the middle of the yards on their aft ſide, there might be fixed a cleat, or bolſter, which, in oblique courſes, puſhing them to leeward, would eaſe them off from the ſhrouds, and facilitate their bracing in carrying their center of gravity, as well as the center of the abſolute effort, a little to leeward; which operation would of courſe draw that center of gravity nearer to the axis of the ſhip, from which it is ſo eſſential to remove it as little as poſſible.

CHAPTER X.

GENERAL OBSERVATIONS ON THE EFFECT OF MORE OR LESS SURFACE OF SAILS EXPOSED, IN VARIOUS WEATHERS, TO THE WIND.

I. WHEN a ſhip, with a certain quantity of ſail has acquired the utmoſt velocity with the power which then puts her in motion, it is certain that, if the ſurface of the ſails is either increaſed or diminiſhed, the rapidity of the head-way will likewiſe augment or leſſen in a very complicated ratio. In order to find out the degree of impulſion of the wind on the ſails, multiply their ſurface by the ſquare of the exceſs of the velocity of the wind on that of the ſhip, or, which is the ſame thing, by the ſquare of the apparent velocity of the wind. Then, a ſecond multiplication of that product is to be made by the ſquare of the ſine of the angle of abſolute incidence, or, in the ſecond caſe, by the ſquare of the ſine of apparent incidence. And this ſecond product will give the degree of the abſolute impulſe of the wind on the ſails, in the actual ſtate which we have ſuppoſed.

In order to find in what ratio the ſurface of the ſails is to be augmented to make the ſhip acquire a certain degree of velocity above that which ſhe poſſeſſed under a ſuppoſed particular quantity of ſail, it muſt firſt be known by how much the velocity of the wind exceeds that of the ſhip: then, knowing how many degrees her head-way is wiſhed to be accelerated, the ſails muſt be increaſed in the ratio of the ſquares of the two velocities of the ſhip; viz. that which was known before the alteration of the ſails, and that which ſhe is afterwards to acquire. But, as the ſhip recedes ſo much the more from the action of the impulſe of the wind as her velocity increaſes, it is evident the ſurface of the ſails muſt be increaſed alſo in the ratio of the ſquare of the two exceſſes, that is, the different exceſs of the wind over that of the ſhip both before and after the increaſe of the ſails: then, the ſhip will acquire the wiſhed-for velocity; pro-

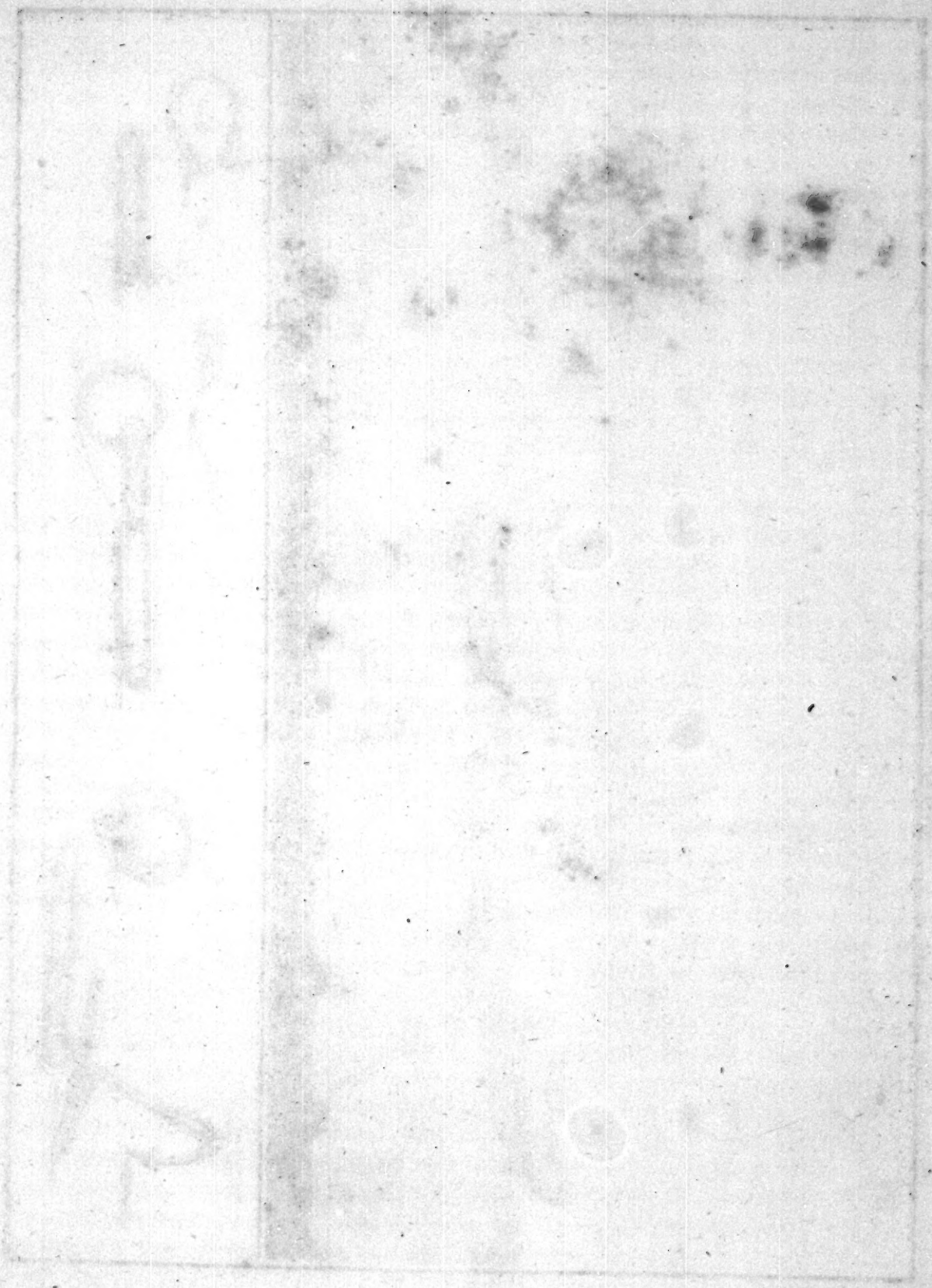
vided no other cauſe happens to oppoſe it, as we have already hinted before, and as we ſhall have an opportunity to ſhew more particularly hereafter.

Suppoſe the wind has 12 degrees velocity, and the ſhip, under a certain ſet of ſails, has 3; the velocity of the wind, in the direct courſe, will exceed that of the ſhip only by 9 degrees. If the velocity of the ſhip is intended to equal the third part of that of the wind, and to have therefore 4 degrees for head-way; then the ſails are, to this effect, to be increaſed in the ratio of the ſquares of the two velocities 9 to 16, becauſe the reſiſtance of the water on the bows will increaſe in that very proportion. But, in the firſt caſe, the velocity of the wind exceeded that of the ſhip by 9 degrees, while in the ſecond caſe it exceeds it no more than 8. Hence it reſults that the impulſe of the wind on the ſails has diminiſhed in the ratio of the two ſquares 81 to 64: and, in order to repair that loſs in the impulſion of the wind, the expanſion of the ſails is alſo to be increaſed in that laſt ratio of 64 to 81: then the ſhip will be able to run with the degree of velocity deſired.

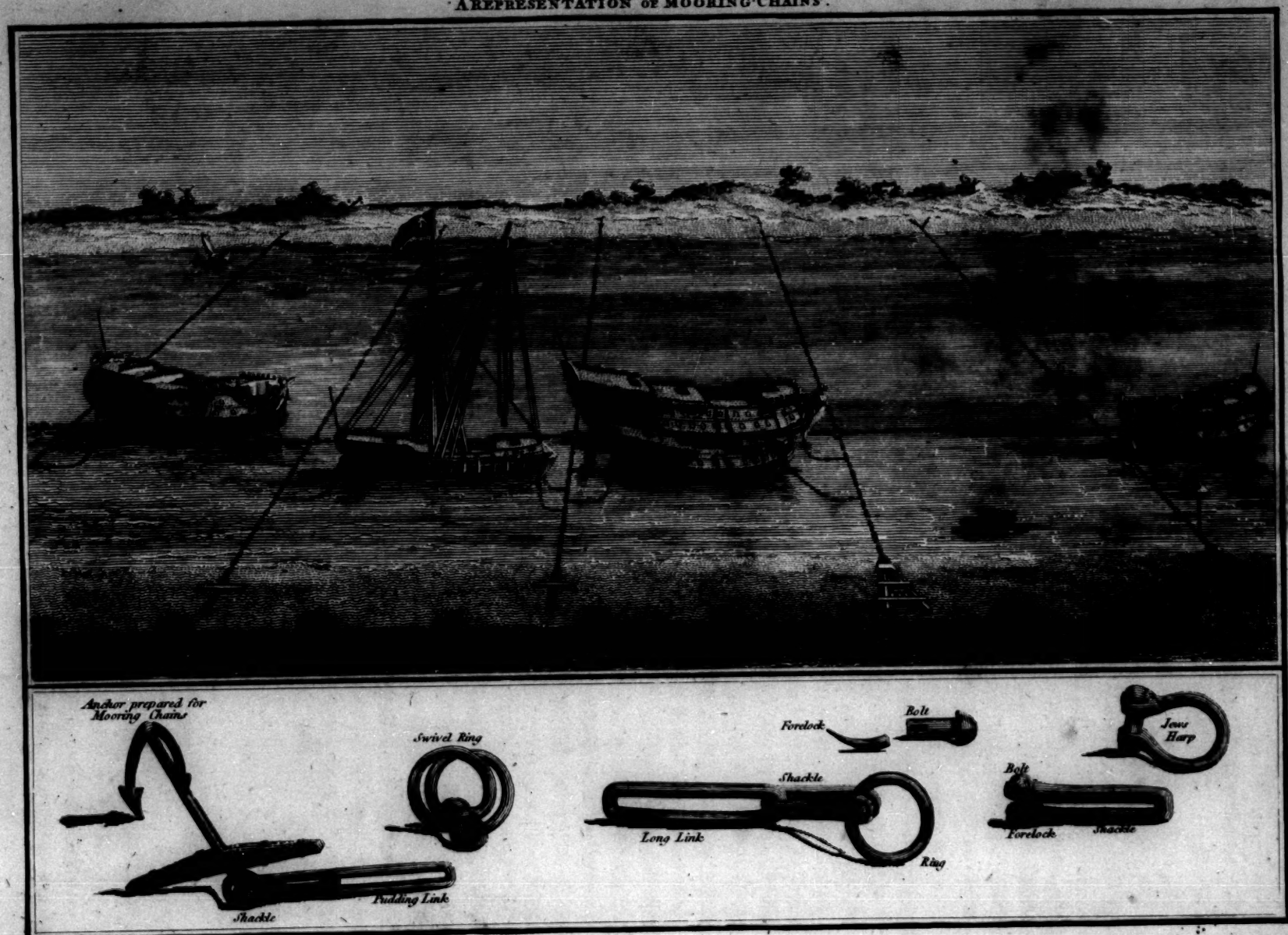
II. When the maſting is perfect, that is to ſay, when the ſhip is maſted according to the *point-velique*, ſhe will riſe from the water parallel to herſelf by a certain quantity relative to her velocity, and ſhe will riſe always more and more in proportion as ſhe acquires new degrees of velocity in her head-way. Becauſe ſhe is moved by forces which ſtand exactly and continually in equilibrium with the action of the water on her bows, the inclination of which forward contributes ſo much the more to that riſing out of the water as it is more remote from the perpendicular. For, then, the vertical impulſion will have more power, ſince it acts more directly on a very oblique bow than it would on a vertical one. This reaſoning may be as exactly applied to the direct impulſion, the abſolute effort of which may be decompoſed, ſince it acts leſs againſt the velocity of the ſailing on an oblique bow than on a vertical one, while the other part of its action joins with the vertical impulſe to raiſe the head of the ſhip, which ſhocks the water with very great ſtrength when ſhe is arrived to a great velocity, and which water oppoſes her ſo much the more as it is ſhocked with violence. So it is eaſy to conclude that, in any ſhip whatever, the more rapid the head-way is the more parallel to herſelf ſhe riſes above the water, if the center of effort of her ſails is at the ſame height as the *point-velique:* for the point of the bows, on which may be conſidered as united the action of the water which oppoſes its progreſs, may be taken alſo as the point of bearing. So that all the ſails acting from abaft to forward on different points of the axis of the ſhip, (ſhe being conſidered as a lever in the direction of her length), they raiſe the after part of that point, and place it on a level with the elevation of the bows; which never can happen, if the center of effort of the ſails is above or below the *point-velique.* If it is placed above, the power of the ſails, acting on too long levers, will raiſe the after part of the point of bearing of the bows above the level of the elevation of the ſhip's head. If it is placed below, the power of the ſails, acting on too ſhort levers, the after part of the ſhip will remain plunged in the water, without being able to riſe on a level with the bows. Therefore, in either of theſe two caſes, when the center of effort of the ſails is either above or below the *point-velique*, the ſhip, however well-built, will loſe ſome of the qualities of ſailing, either in her readineſs to obey the helm, or in her ſteadineſs to carry ſail, eſpecially if ſhe is over-maſted: for, in this laſt caſe, ſhe will gripe, incline eaſily, and loſe much of her head-way, ſince her bows will plunge in the fluid, or, rather, her ſtern will riſe too much out of it; which will diminiſh the action of the water on the rudder and increaſe it on the bows. In the laſt caſe, an inconvenience of which ſhip-builders ſeldom, if ever, have been guilty, the ſhip will be ſlow to obey, and her head-way will be ſlackened, becauſe ſhe will never preſent her moſt advantageous water-lines to the fluid, nor have a ſufficient

ſurface of ſails, as, although their width is the ſame, their height is not ſo. The point of perfection then is this, viz. when the center of effort of the ſails is placed at the height of the *point-velique*.

III. The next propoſition will appear a paradox to many ſeamen. But, it is no leſs ſelf-evident. There are many caſes in which the adding of a few ſails, inſtead of increaſing a ſhip's velocity, retards it. It is however an error into which all ſeamen almoſt continually fall, when, in a ſtrong gale, they want either to diſtance, or approach a ſhip. When their own ſhip is arrived to a very great velocity (ſometimes of twelve and more knots an hour), if they have to do with an adverſary the rapidity of which is nearly equal to that of their own ſhip, they fancy that, by adding more ſails to thoſe they have already, at the time when their ſhip is perhaps beſt diſpoſed and arrived at its utmoſt degree of ſwiftneſs, they ſhall increaſe the rapidity of her head-way; and, accordingly, they hoiſt up ſome additional ſtay or ſtudding ſails, eſpecially if the wind happens to be on the beam or a little more aft. But, by this their expectations are baulked; for the ſhip becomes more inclining, her head plunges, and the reſiſtance of her bows increaſing in the direction of the keel more than the effort of the ſails in the direction of the courſe, the rapidity decreaſes in ſo much as the water acts more powerfully than the ſail does. Beſides all this, thoſe forward and lateral inclinations of the ſhip, produced by the effort of the new-added ſail, which have cauſed the center of effort of the ſails to aſcend, and the *point-velique* to deſcend (if the new-added ſail has been ſet above it), cauſe alſo the ſhip not to riſe from the water parallel to herſelf; ſhe riſes her ſtern and plunges her head; whence it reſults that ſhe gripes from two cauſes: firſt, becauſe, as her ſtern lies leſs in the water, the rudder is of courſe expoſed to a leſs ſhock; and the ſtern, which always acts as a ſail, is more eaſily maſtered by the wind which ſtrikes it then on the beam with a great deal more efficacy than it does her head; on the other hand, as the reſiſtance of the water on the lee bow has increaſed by the inclining of the head, plunging thereby that part of the ſhip which is the moſt full in its ſhape, and increaſing alſo the ſurface on which the water acts, which has both diminiſhed the head-way and increaſed at the ſame time the lateral impulſe on the ſide of the bow; ſo that lateral impulſion forces the ſhip to windward more at the head, than ſhe is impelled to fall off by the lateral part of the effort of the new-added ſail. Whence it follows that the ſhip becomes ſtill more griping, which is an additional cauſe of the decreaſe of her head-way; becauſe, the helm being more a-weather, in order to hold the ſhip better to her courſe, more of the rudder itſelf is preſented to the run of the water; and by the great ſurface it offers more directly to its ſhock, and retards the velocity of the ſhip. Whence we are to conclude that as ſoon as any more ſails are added to a ſhip which carries already a ſufficient quantity of them, ſhe will loſe her qualities of ſteering well and making good head-way, whether thoſe additional ſails are ſet forward or a-ſtern.



A REPRESENTATION OF MOORING CHAINS.



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THE

PRACTICE OF WORKING SHIPS.

THE uſeful part of a ſeaman's duty is the application of his theoretic knowledge to the various evolutions of a ſhip. We are now about to ſhew how thoſe various evolutions ſhould be performed, conſiſtently with the principles upon which the ſcience of Navigation is founded.

A ſhip, when launched from the ſtocks, is furniſhed with one ſtream anchor, and another which is termed a launching-anchor, ſomewhat heavier than the ſtream-anchor, hanging by ſtoppers to the catheads; by one or both of theſe ſhe is firſt brought up, and afterwards warped to what are termed

HEAD AND STERN MOORINGS;

of which the following is an accurate deſcription. Acroſs the bottom of the harbour or river, two chains, (parallel to each other, if the bed of the river will admit of it), are extended at the diſtance of 200 feet from each other, by means of anchors, having one fluke only, which is ſunk, and ſecured in the ground by piles, on the oppoſite ſides near low-water mark. To the rings of thoſe anchors theſe chains are connected by a peculiar ſort of link, called a ſhackle, which is delineated in the plate.

Each of theſe chains has, at about one-third of its length, a large iron ring, to which is faſtened a chain, called an up-and-down ſpan; which, lying on the ground, connects the parallel chains, and ſerves to keep them ſteadily in their places. At about 30 or 40 feet diſtance from each other, along each chain, chain-pendents (from 5 to 9 in number) are faſtened, having, at the end which connects with the ground-work, a ſhackle; and, at the other end, a link called a jews-harp, through which the bridle or hawſer of a ſhip, when moored, is paſſed. The centre chain-pendent is fixed to the ring of the chain; and the number of the chains muſt depend upon the number of tiers required, each tier occupying two chains, becauſe the ſhips are moored head and ſtern. But every tier does not always occupy two whole chains; becauſe, unleſs a paſſage between the tiers is requiſite, the chain to which the head chain-pendent of one tier is affixed, has likewiſe faſtened to it the ſtern chain-pendent of the next tier. A reference to the plate will elucidate this.

Theſe moorings are calculated for and uſed in rivers, or harbours of ſmall extent; but in other places, where either many ſhips do not frequent, or the extent of which is conſiderable, there is another ſort in uſe, called,

SWINGING MOORINGS.

Theſe differ from the former only in this; the ground-work being the ſame, to the ring of the chain is fixed one chain-pendent, the end of which is paſſed through a large buoy; and to that is connected a ſwivel ring by a ſhackle; and thus kept conſtantly from ſinking to the ground. This is uſed for mooring one or two ſhips to. Near each end of the chain is fixed one more chain-pendent, ſupported likewiſe by a buoy, which is uſed only for the purpoſe of warping ſhips from the middle to any intended place.

OF MOORING TO HEAD AND STERN MOORINGS.

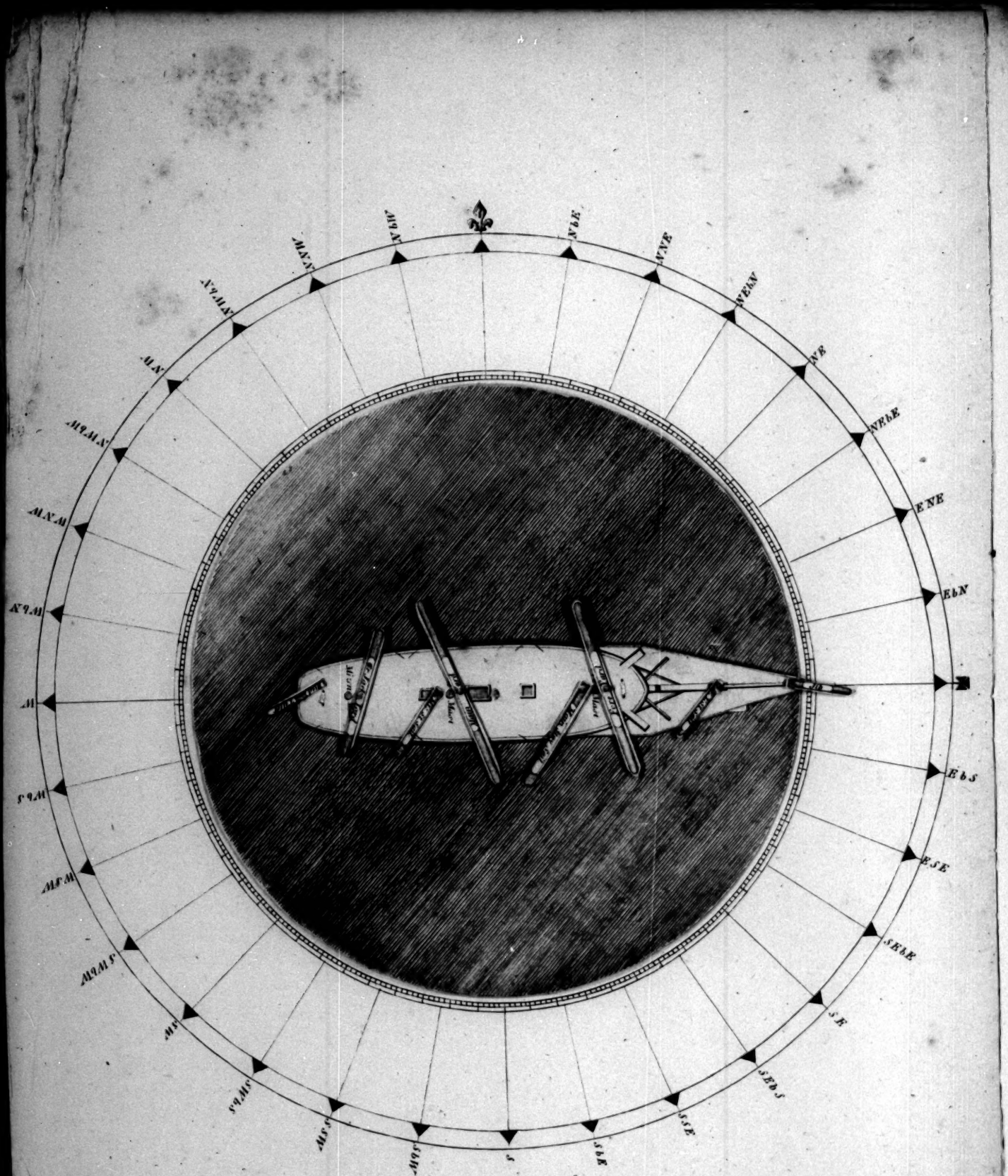
To theſe moorings ſhips are thus faſtened: clench the end of a bridle to the jews-harp of the chain-pendent, and paſs it into the hawſe-hole; then heave it up and bit it. Take the after bridles into the gun-room port, or in upon the quarters; and take a round turn round the beam of the after hatch, and croſs it with a throat and round ſeizing; or if more convenient, round the jeer bits.

OF MOORING TO SWINGING MOORINGS.

Paſs out the ends of the bridle; one on each ſide, through the hawſe-hole next the ſtem; then paſs them through the ſwivel-ring of the chain-pendent; then return them into the ſhip through the after hawſe-holes, and bit them.

In this ſituation a ſhip is fitted for ſea, by regularly ſtowing her ballaſt, and getting on board her rigging, ſtores, &c.

We ſhall therefore proceed to diſcuſs the Theory and Practice of ballaſting, and ſhall afterwards treat of the manner of getting on board and ſtowing the anchors and cables, before we enter upon the method of navigating a veſſel in various ſituations



Published as the Act directs, Jan.ry 1.st 1794 by D.l Steel Tower Hill.

BEFORE we enter upon the practice of working ſhips, it becomes proper to introduce to the Reader's notice two figures, which may be of ſervice to the juvenile ſeaman, and aſſiſt him greatly in comprehending the directions given.

The firſt of theſe (which is affixed to the oppoſite page) is a picture of all the courſes which a ſhip can make, the wind being in any given point.

The outer circle of this figure is marked with the points of the compaſs; the inner circle is moveable round its own center; and, if the arrow be brought to that point of the outer circle from which the wind is ſuppoſed to blow, all the various courſes, on both tacks, that may be ſailed with that wind, will be inſtantly ſeen.

Example. Let the wind be ſuppoſed at Eaſt, then move the inner circle, till the arrow is at the Eaſt point, and it will be found, that cloſe-hauled on the larboard tack is S S E; one point large, larboard tack, is S by E; wind on the beam, larboard tack, is S; and thus all the courſes are ſhewn from cloſe-hauled on one tack to cloſe-hauled on the other tack.

The ſecond figure (affixed to this page) is the minature of a ſhip, ſo contrived as to convey a very lively idea of the manner of working a ſhip in tacking, veering, &c.

The extreme circle is ſuppoſed to be the horizon, marked with the points of the compaſs.

The inner graduated circle is divided into 360 degrees.

The moveable circle is intended to repreſent the direction of a tide, current, or ſwell of the ſea, whenever their ſetting varies from the direction of the wind; but, in caſes where neither tide, current, or ſwell of the ſea exiſt, or where they run directly to leeward, this moveable circle is to be turned, ſo as that the lines which croſs it are parallel with the wind.

The ſmall ſhip moves round its ſuppoſed center of gravity, and has on it the jib, lower yards, and ſtay-ſails, inſcribed *jib, fore ſtay-ſail, fore yard, main ſtayſail, main yard, mizen ſtay-ſail, croſs-jack-yard.* The yards muſt be conceived to repreſent either the whole of the ſquare ſails upon each maſt, or only ſuch of them as may be neceſſary to the particular manœuvre it may be uſed for: the ſame obſervation applies to the ſtayſails; the *tiller* and *rudder* need no explanation. The figure is not confuſed with braces to the yards, nor ſheets to the ſtayſails; therefore, when it is neceſſary to let go a particular ſheet, to ſlack or haul a particular brace, theſe muſt be imagined to be done.

THE FOLLOWING EXAMPLE WILL EXPLAIN THE MANNER OF USING IT.

Suppoſe the wind at North, and that a ſhip, which is ſailing cloſe-hauled on the ſtarboard tack, is to be put about, and got on the larboard tack, cloſe-hauled.

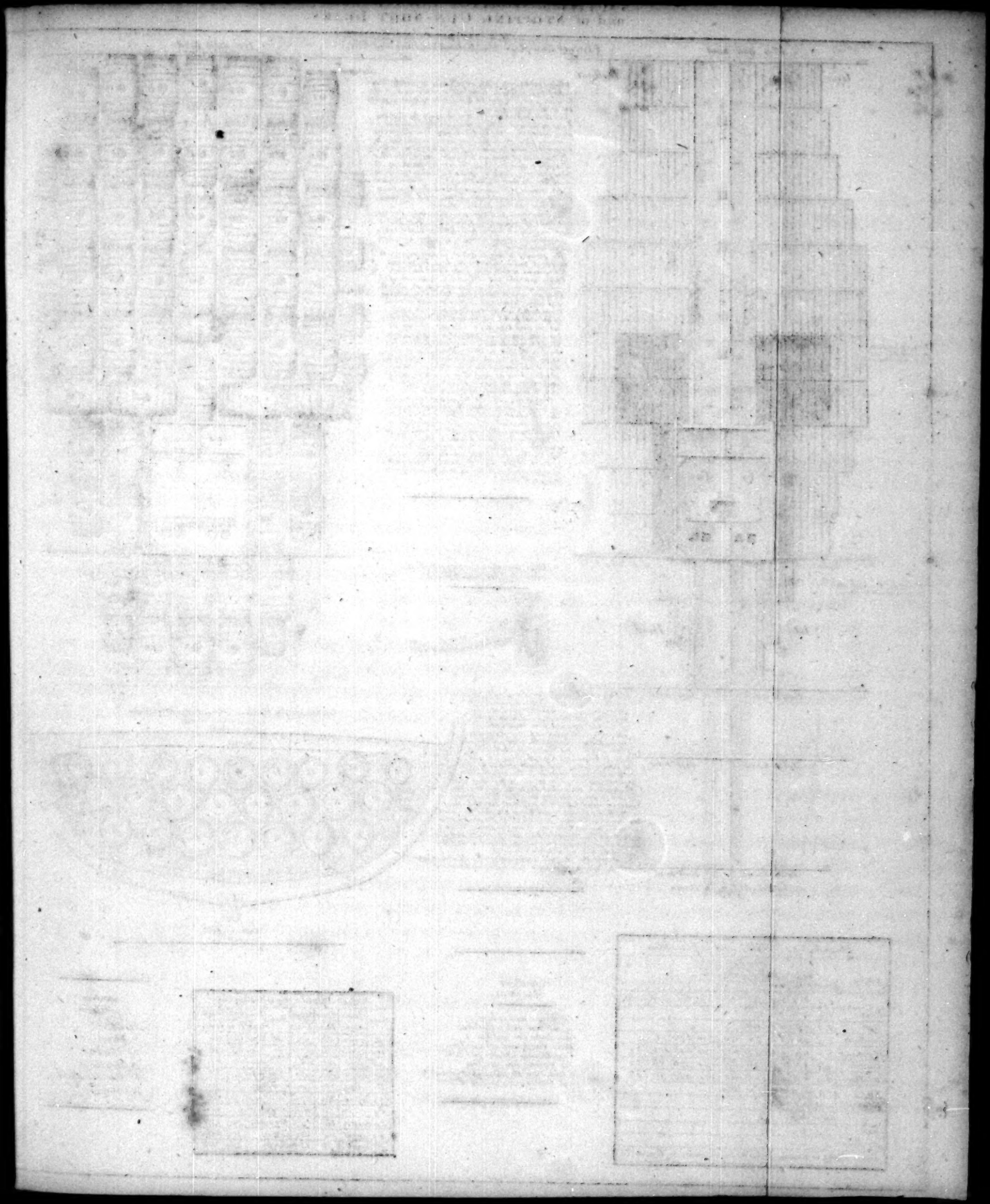
Firſt, place the lines of the moveable circle in the direction of the wind, becauſe we ſhall now ſuppoſe that there is neither tide, current, or ſwell; then place the ſhip's head to the W N W, trimming the ſails ſo as to make an angle with the keel of 35 degrees, (the uſual angle when near to the wind,) which is eaſily done by means of the graduated circle, and put the helm in midſhips.

From this ſituation the ſhip is to be got on the other tack.

Now put the helm a-lee, and imagine the fore ſheet and fore-top bowline to be let go; move the ſhip gradually to the wind, as if it were done by the action of the rudder, till the yards are in the direction of the wind, and of courſe the wind is out of the ſails; at which time ſuppoſe tacks and ſheets to be raiſed. Then move her head to about a point or rather better from the wind, and the fore ſail will be flat a-back, forcing round the ſhip's head; the wind will now catch a-back the weather leech of the main ſail; therefore ſuppoſe the main ſail to be hauled, and brace round ſharp the after yards. The ſails being now all a-back, and the ſhip moved head to wind, it may be ſuppoſed that the headway has ceaſed, and the ſternway commenced; now therefore ſhift the helm. The ſhip then being moved to bring the wind on the larboard ſide, bear the ſtay-ſails over to leeward, and keep moving the ſhip round, till her head is ſix points from the wind, when it will be ſeen that the after ſails are full; then let go and haul, brace round the head yards, right the helm, trim all ſharp, and the ſhip will be cloſe-hauled on the larboard tack.

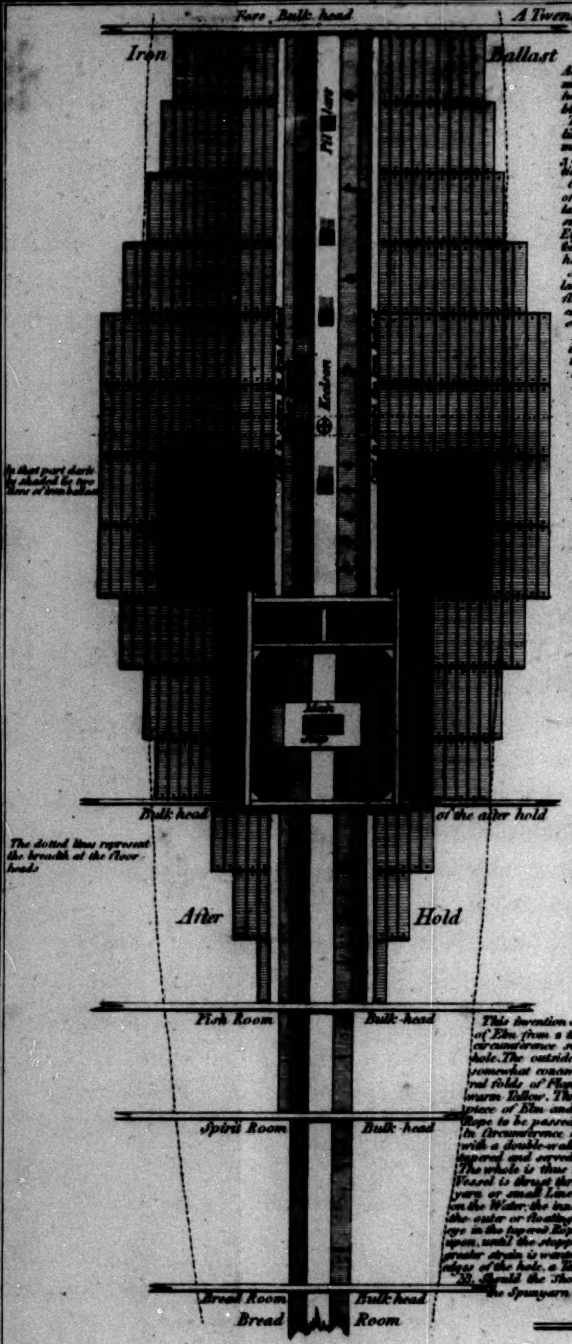
If a current, tide, or ſwell of the ſea, ſet in any particular direction, different from that of the wind, the lines acroſs the moveable circle muſt be placed in that direction; by which, as the operation proceeds, the mind will more correctly perceive in what degree that tide, current, or ſwell, will operate either to retard or accelerate the manœuvre.

In the courſe of the practice of working ſhips, an occaſional uſe of this figure may often aſſiſt the reader to conceive, with greater readineſs and with more preciſion, the effect of various operations.



and of Stopping Gun-Shot Leaks.

A Twenty Gun Ships Iron Ballast and Ground Tier.



A Ships tendency to pitch or roll may be greatly diminished by a judicious distribution of her stowage, the heaviest part of it should therefore be as near as possible to the centre of gravity.

The Iron ballast is first stowed, upon the foot wa-lings in the main hold, next to fir cants nailed at 5 or more inches from the limber-boards. It is winged up 3 or more pigs above the floor heads in midships. Two tiers of pigs are in the wake of ŷ main hatchway & well wings.

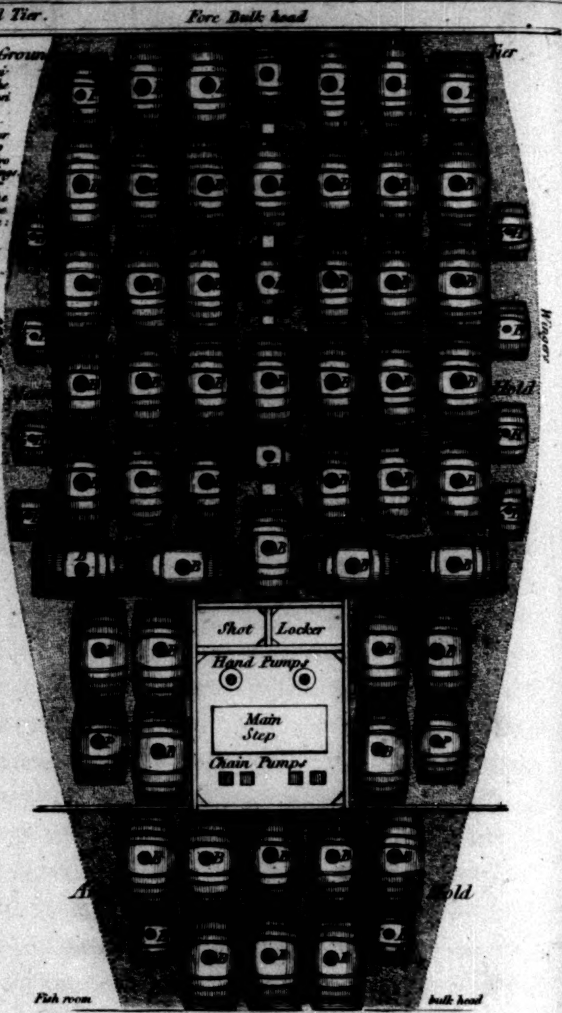
Of Iron ballast there are two sorts; one of 7, the other of 11 pigs to the ton. Sloops &c use the latter only. The large pigs are 3 feet long, and 6 by 5 inches square, the small are one foot 6 inches long by by 4 Inches square: Eight or more pigs are reserved for ballasting boats &c. & are placed conveniently for use, down the main hatch-way after the hold is stowed.

Ships having a clear run aft, seldom have Iron ballast abaft the pump well. Large Ships, that have floor and futtock riders, have the Iron ballast stowed lengthwise or athwartships, according to ŷ length of the chambers.

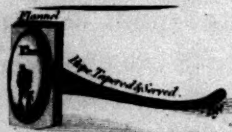
The quantity of shingle ballast is discretionary. It is spread and levelled over the Iron. The ground tier of water is then stowed; the Casks have their bungs upwards; are wedged free from each other, and are sunk ¼ of their diameter into the shingle. They are stowed either chine, and chine, or bilge and chine; beginning at the foremast or coal room bulkhead: the breakage, if any is made at the well bulkhead: the midship tiers, fore & aft, are first laid down; and the sides are filled with wingers of small Casks, as half Hogsheads, &c. which must not be raised above the level of the tier, or they will cause a breakage in the tier above, which is stowed in the cant-line of the ground tier. The stowage is thus continued for as many tiers as will lie sufficiently clear of the beams; a proper quantity of shingle being laid between every tier.

Abreast the well over the ground tier are stowed wet provisions; above the ground tier in the after hold are stowed dry provisions: and between the Casks are wood & shingle ballast. The fish room will commonly take one longer of pipes; in it are stowed some of the spirits and Wine; sometimes Coals: In the spirit room are the Wine and Spirits for the Ships use.

*** In Merchant Ships the various Casks packages &c must be wedged off from the bottom sides pump well &c.



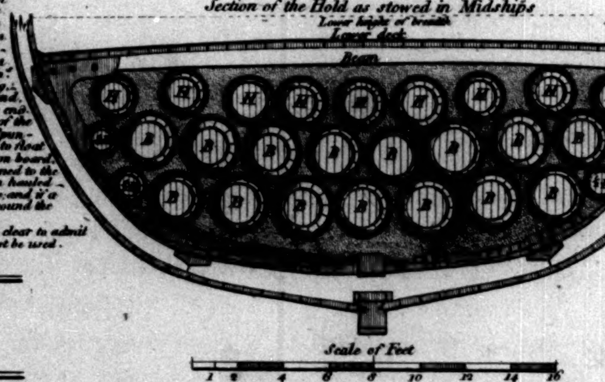
Mr. Hill's invention for Stopping Leaks, occasioned by Gun-shot holes.



This invention consists of a circular piece of Elm from 2 to 4 Inches thick, and of a circumference sufficient to cover the shot hole. The outside convex and the inside somewhat concaved; to be lined with several folds of Flannel or Kersey dipped in warm Tallow. Through the Centre of this piece of Elm and Flannel is a hole for a Rope to be passed through, from 2 to 4 In.s in Circumference and about Six Feet long, with a double-wall-knot on the outside end, tapered and served to an eye at the other end. The whole is thus used. From the inside of the Vessel is thrust through the Shot Hole, Spun-yarn or small Line, of a sufficient length to float on the Water; the inner end being retained on board, the outer or floating one is taken up, & fastened to the eye in the tapered Rope; the Spunyarn is then hauled upon, until the stopper covers the Shot hole; and if a greater strain is wanted to press the flannel round the edges of the hole, a Tackle must be used.

NB. Should the Shot hole not be sufficiently clear to admit the Spunyarn through it, an auger must be used.

Section of the Hold as stowed in Midships



Dimensions &c of Casks used in Victualling									
Casks	Length	Diam.r of the Bunge	Diam.r of the Chine	Contents in Gall. of Beer	Pieces of Beef 4 lb. each	Pieces of Pork 2 lb. each	Flour	Pease	Oatmeal
	F.I	F.I	F.I	No.	No.	No.	lb.s	Gall.s	Gall.s
Leager	4.6	3.0	2.5	150					
Butt	4.4	2.8½	2.2	108					
Puncheon	3.5	2.6½	2.1	72	170	310	672	76	
Hogshead	3.0	2.3	1.11	54	124	220	448	64	84
Barrels	2.7	2.0	1.11	36	86	154	336	48	72
Half Hog.ds	2.4	1.8	1.7	28	64	120	224	32	48
Pipes	4.1	2.11	2.4	for	Wine				
Breakers	2.0	1.1	0.10						
	large	deep							
Vatts	5.1	3.0							
for Sails	4.7	2.0							
Gang Casks is a name given to small Casks, as Barrels &c									

Victualling Measures.

One leager and a half is one Ton and 9 Gallons
Two Butts are one Ton
Three Puncheons are one Ton
Four Hogsheads are one Ton
Six Barrels are one Ton
Eight half Hogsheads are one Ton
216 Gallons are one Ton of Beer

Ballast allowed to the following Ships							
Guns	Tonnage	Iron Tons	Shingle Tons	Guns	Tonnage	Iron Tons	Shingle Tons
110	2290	180	370	36	870	65	160
100	2090	180	370	32	700	65	140
98	2110	160	350	28	600	60	100
90	1870	160	350	24	500	50	80
80	1620	140	300	22	450	50	70
74	1700	80	270	20	400	50	60
64	1370	70	260	Sloop	300	50	40
50	1100	65	270	Brig	160	30	15
44	900	65	160	Cutter		20	Seldom
38	930	70	170	Sloop		15	any

Contractions Explained.

B. Butt.
b. Barrel.
bs Breakers.
H. Hogshead.
½H. Half Hogshead.
P. Puncheon.

OF THE BALLAST AND LADING.

WHEN a ſhip is loading, it ſhould be conſidered, that her tendency to pitch or roll depends not alone on her form, but even more upon the more or leſs advantageous diſtribution of the heavieſt parts of her cargo.

Particular attention is to be paid to moderate her pitching, as that is what moſt fatigues a ſhip and her maſts; and it is moſtly in one of theſe motions that maſts are ſeen to break, particularly when the head riſes after having pitched. Although the rolling be proportionably a more conſiderable movement than pitching, it is ſeldom any accident is ſeen to ariſe from it, as it is always a ſlow one. It is however not leſs proper to prevent it as much as poſſible. This will in general be eaſily obtained, without being any way detrimental to the ſhip's ſtiff carrying of ſail, if, when the ballaſt is iron, you ſtow it up to the floor-heads; becauſe it will recall the ſhip with leſs violence after her having inclined, and it will act on a point but little diſtant from the center of gravity. To make this clearer, let us conſider it by the aſſiſtance of a figure.

Firſt, let it be underſtood, that the CENTER OF GRAVITY of a body is that point by which it may be ſuſpended, and the parts remain in perfect equilibrium.

That the CENTER OF CAVITY is the center of that part of the ſhip's body which is immerſed in the water; and which is alſo the center of the vertical force that the water exerts to ſupport the veſſel:

That the CENTER OF MOTION is the point upon which a veſſel oſcillates, or rolls, when put in motion.

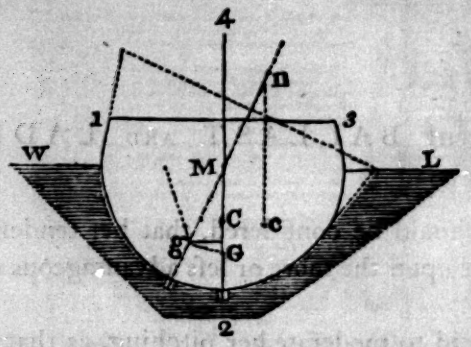
That the METACENTER is that point, above which the center of gravity muſt by no means be placed; becauſe, if it were, the veſſel would overſet.

Various methods have been recommended to find all theſe different points; ſome of them are in their nature fixed, others varying. Thus, when a ſhip is completely loaded, the center of gravity is fixed, howſoever the veſſel may alter her poſition.

The center of motion is always in a line with the water's edge, when the center of gravity is even with or below the ſurface of the water; but, whenever the center of gravity is above the water's ſurface, the center of gravity is then the center of motion. This muſt be underſtood of bodies not perfectly circular; for, if circular, the center of motion will be the center of the circle.

The center of cavity varies with every inclination of the ſhip, becauſe that depends upon the ſhape of the body immerſed.

The metacenter (which has been likewiſe called the SHIFTING CENTER) depends upon the ſituation of the center of cavity; for it is that point where a vertical line drawn from the center of cavity cuts a line paſſing through the center of gravity and being perpendicular to the keel.



Let the ſegment of a circle 1 2 3 repreſent the tranſverſe ſection of a veſſel's bottom; W L the ſurface of the water; M the metacenter as well as the center of motion, becauſe this is a circle; C the center of cavity; G the center of gravity; and the line 2 4 the vertical axis of the veſſel which may be turned round the point M, as on a fulcrum ſupported by the center of cavity. By thus ſimply conſidering the veſſel as a lever in the direction of her vertical axis playing round her center of motion, it is plain, that if the center of gravity was placed above the point M, being the metacenter too, the veſſel would upſet; therefore, that the ſhip may have ſtability, the center of gravity muſt be below this point: and it may be obſerved, that the farther G is removed from the metacenter, the greater muſt be its force, as the gravity then acts with a greater length of lever, conſidering the fulcrum of that lever to be at the center of motion; or, if the weight at G be augmented, it will likewiſe increaſe the force; therefore the force of G may be expreſſed, by multiplying the balance of weight beneath the center of motion, by the diſtance of the center of gravity from the center of motion.

The centers of cavity and motion (in circular bodies) will ever be in a line perpendicular to the horizon, but the center of gravity may be either on one ſide or the other of this line. When ſuch a body is at reſt, the center of gravity will be in this line; but if in motion it will be diverted from it. Thus the points M and C, will always be perpendicular to W L, but the point G, by the body's rolling, may be on either ſide; for inſtance at g. While G is perpendicularly beneath the center of motion its action can only tend to *preſerve* this circular body in her erect poſition; but if it is removed to either ſide as to g, its action is to *return* it to the erect poſition; and this action increaſes as the diſtance G g, which is the ſine of the angle of roll g M G, the diſtance M G being conſidered as the radius. Thus, to gain the force of gravity with any roll as g M G, let the balance of weight beneath the center of motion be multiplied by the ſine of the angle of roll G g.

But the tendency to roll may be alſo diminiſhed by the ſhape of the hull: for, let us ſuppoſe that the tranſverſe ſection be allowed more beam, and increaſed by the dotted lines. Now, when this veſſel is rolled over, it is plain that the cavity will be augmented towards the ſide L, of courſe its center muſt remove towards L, ſay to *c*; and, if from *c* be erected a perpendicular to the horizon, it will cut the vertical axis at n, which will, in this caſe, be the metacenter, above which if the center of gravity were placed, it would act in conjunction with the center of cavity to overſet the veſſel: but, as the center of gravity is here below it at g, her ſtability will be increaſed by the increaſed diſtance of G from n, the metacenter; and the veſſel will roll round the point M as her center of motion.

When ſailing in ſmooth water, the greater the ſtability the better; but if a veſſel with a heavy cargo, ſtowed low in her bottom, be ſent out into a rough tempeſtuous ſea, where every wave will throw her from her equilibrium, ſhe will return with ſuch violence as to endanger her maſts; and ſhould ſhe

be diſmaſted, her roll will then be with ſtill greater force, poſſibly to the deſtruction of her hull. Was the cargo in this labourſome veſſel to be removed higher up towards the center of motion, ſo as to leſſen her ſtability, ſhe would be found conſiderably eaſier; her roll would be by ſuch deliberate motions, as to leſſen the danger to her maſts and hull.

The ballaſt is placed round and very near the center of gravity of the ſhip, becauſe it will prevent the motion of the pitching being ſo hard as it would, if that weight were diſtant either afore or abaft that point. Whenever the ſea runs a little high, the ſhip is never carried by a ſingle wave; there are generally two or three always paſſing under at the ſame time, unleſs when the ſea is extremely long, the ſwells coming from a great diſtance, and in latitudes very remote from land: for, then, it happens that the largeſt ſhips are ſometimes carried by one ſingle wave. But, in either circumſtance, the ballaſt ought not to be ſtretched afore or abaft the center of gravity, as ſoon as the ſhip is in the parallel to her draught of water marked for the ballaſt, which it is abſolutely eſſential to pay attention to. To prove this principle, ſuppoſe in either caſe a long or ſhort ſurge, and that the water ſtrikes the ſhip forward, that thereby ſhe may be expoſed to the greateſt and hardeſt pitching: for, when the wave takes a ſhip under the ſtern, her motions, if ſhe has got a little head-way, are not dangerous; becauſe, as ſhe flies before the wave, ſhe recedes in ſome meaſure from its impulſe; while, in the firſt caſe, ſhe increaſes on the contrary that ſame impulſe in the ratio of the ſquare of all her velocity.

First, the ſhip, whoſe extremities are light or little loaded, being ſuppoſed to run with any velocity whatever againſt the wave which comes to her a-head, ſhocks that wave with a force expreſſed by the ſquare of the ſum of the two velocities: ſhe divides it and goes through it, at the ſame inſtant that ſhe is raiſed by the vertical impulſe of that column of water, which oppoſes to her a ſupporting power too conſiderable for her weight to diſplace: the wave which follows produces the ſame effect in receiving the fall of the ſhip, becauſe the firſt is already under the middle of the ſhip, whence it paſſes to the ſtern, which is ſupported by it, while the ſecond takes its place in the middle, and the third is come to ſupport the head; and this is an uninterrupted ſucceſſion. This motion continuing thus as long as the ſea is agitated, it follows that the ſhip is never at reſt: no ſooner has ſhe been raiſed by a wave, but ſhe falls again when that wave is gone, which falling is proportionably leſs ſharp as her head is leſs heavy: the ſhake is then leſs violent, ſince ſhe ſhocks the water with a leſs maſs, which prevents her pitching ſo deep as ſhe would, if ſhe were more heavy; conſequently, the maſting does not ſuffer, and the head-way is leſs delayed, as the fulleſt part of the bows is not ſo much expoſed to the ſhock of the water.

Secondly, When the ſhip is carried by one ſingle wave, her fall is ſtill leſs ſharp, if little loaded a-head, than when ſhe is carried only by the middle. She riſes, therefore, more eaſily at the moment the other wave comes to ſtrike her, and the ſhake is not ſo violent. Was ſhe to plunge deeper into the fluid, it might happen that the column of water would become higher than her head, and, paſſing partly over it, would expoſe her to the danger of foundering.

In the ſtowing of the cargo, it is proper to place the heavieſt part of the ſtowage as low as poſſible, taking care to preſerve that draught of the ſhip which is moſt advantageous for her, whether ſhe be in ballaſt or when laden. Thoſe points are marked both at the head and ſtern: In a word, the great art of ſtowing lies, in endeavouring that each of the vertical parts, in which the extremities of a ſhip may be ſuppoſed to be equally divided, be lighter, when her lading is complete, than the weight of the maſs of water they are to diſplace; obſerving always, that the vertical parts of the middle admit of being loaded more heavily than the weight of water they are able to diſplace.

THE PRACTICE OF STOWING BALLAST, &c.

In the royal navy, the iron ballaſt is firſt ſtowed fore and aft, from bulkhead to bulkhead in the main hold, next to fir cants nailed on the limber-ſtrakes on each ſide the kelſon, five or more inches clear of the limber-boards; and is winged up 3 or more pigs above the floor-heads in the midſhips, or bearing part of the ſhip, and there are two tiers of pigs in the wake of the main hatchway and well-wings. Ships, built with a very clean run aft, ſeldom have any iron ballaſt ſtowed abaft the pump well or after hold. Ships that have floor and futtock riders, have the iron ballaſt ſtowed, either lengthways or athwart-ſhips, agreeably to the length of the chambers, which are the clear ſpaces between the riders.

The ſhingle ballaſt is next ſpread and levelled over the iron ballaſt; on which is ſtowed the ground tier of water, bung up and bilge free from the ſides, either chine and chine, or bouge and chine, beginning at the coal-room bulkhead, that being the foremoſt, and making the breakage, if any, at the main hatch: The midſhip tiers, fore and aft, are the firſt laid down, and the caſks are ſunk about one quarter of their diameter into the ſhingle; the ſides are filled-in with wingers of ſmall caſks, as half-hogſheads, gang caſks, or breakers; obſerving not to raiſe the wingers above the level of the tier, to cauſe a breakage in the next tier above, which is ſtowed in the cuntline of the ground tier, bung up and bilge free; and ſo on, for as many tiers as can be ſtowed ſufficiently clear of the beams.

In the after hold, between the aft-ſide of the pump well and fiſh room bulkhead are ſtowed the proviſions above the ground tier: between the caſks, billet, or other wood and ſhingle ballaſt.

In the fiſh room are ſtowed ſome of the ſpirits, or wine, and ſometimes coals; and, in the ſpirit room, are ſtowed the wine and ſpirits for the ſhip's uſe.

In the merchant-ſervice, the ſtowage conſiſts, beſides the ballaſt, of caſks, caſes, bales, boxes, &c. which are all carefully wedged off from the bottom, ſides, pump well, &c. and great attention paid that the moſt weighty materials are ſtowed neareſt to the center of gravity, or bearing of the ſhip; and higher or lower in the hold agreeably to the form of the veſſel. A full low built veſſel requires them to be ſtowed high up, that the center of gravity may be raiſed, to keep her from rolling away her maſts, and from being too ſtiff and labourſome; as, on the contrary, a narrow high-built veſſel requires the moſt weighty materials to be ſtowed low down, neareſt the kelſon, that the center of gravity may be kept low, to enable her to carry ſail, and to prevent her overſetting.

By the 19th. Geo II. it is enacted, that if, after June 1, 1746, any maſter or owner, or any perſon acting as maſter of any ſhip or other veſſel whatſoever, ſhall caſt, throw out, or unlade, or if, there ſhall be thrown out, &c. of any veſſel, being within any haven, port, road, channel, or navigable river, within England, any ballaſt, rubbiſh, gravel, earth, ſtone, wreck, or filth, but only upon the land, where the tide or water never flows or runs; any one or more juſtices for the county or place where or near which the offence ſhall be committed, upon the information thereof, ſhall ſummon, or iſſue his warrant for bringing, the maſter or owner of the veſſel, or other perſon acting as ſuch, before him, and, upon appearance or default, ſhall proceed to examine the matter of fact, and upon proof made thereof, either by confeſſion of the party, or on view of the juſtice, or upon the oath of one or more creditable witneſſes, he ſhall convict the ſaid maſter, &c. and fine him at his diſcretion for every ſuch offence any ſum not exceeding 5l. nor under 50s. &c. and for want of ſufficient diſtreſs, the juſtice is to commit the maſter, or perſon acting as ſuch, and convicted as aforeſaid, to the common goal or houſe of correction, for the ſpace of two months, or until payment of the penalties.

Beſides the above general act relating to ballaſt, there are the 6. Geo. II. c. 29 and the 32. Geo. II. which regulate the ballaſting of merchant-veſſels in the River Thames, placing it under the direction of the Corporation of Trinity-houſe.

MANNER OF GETTING ON BOARD AND STOWING THE ANCHORS AND CABLES.

ANCHORS though they bear different names on board of ſhips in the royal navy, as ſheet, beſt bower, ſmall bower, and ſpare, are of the ſame weight. The ſtream and kedge anchors are ſmaller, and grapnels are for boats.

Ships of 110, 100, 98, and 90 guns, have ſeven anchors; from 80 to 20 guns incluſive, 6 anchors; ſhips of 300 tons, and ſloops, have 5; and brigs and cutters 3 anchors.

In fitting out ſhips, the anchors are brought in craft near the bows, being moſt convenient to the hawſe-holes, through which the cables paſs to be clenched.

The bower anchors are firſt catted; which is performed by hooking the hook of the cat-block into the ring of the anchor, and bowſing upon the fall that leads in through a ſnatch-block on the forecaſtle; the cat-falls being previouſly reeved through the ſheaves of the cat-head and cat-block, keeping the hook of the cat-block downwards, and its point inwards. They are then fiſhed, by means of the half-davit, pendent and tackle, thus: The davit is firſt ſtopped in the channel on the ſide wanted, and ſupported by guys: the maſthead guy goes over the end of the davit, with an eye. The other end faſtens round the fore-maſthead, with a round turn and two half hitches. The foremoſt guy goes over the end of the davit, the other end faſtens round the cathead, with two half hitches, and ſecurely ſtopt. The after guy goes over the end of the davit, and makes faſt with two half-hitches, through an eye-bolt in the after part of the fore channel. At the outer end of the davit is hung, by its ſtrap, a large ſingle block; through which is reeved the pendent, with a large iron hook ſpliced in the lower end, to hook the anchor within the flukes; then, to the inner end of the pendent, is made faſt a tackle, by thruſting a toggle through an eye in the block-ſtrap; after that has paſſed through an eye in the pendent, the other block of the tackle is hooked in an eye-bolt in the fore part of the quarter-deck; the effort of the tackle is communicated to the hook, by means of the pendent, by men's bowſing on the tackle-fall. Thus the flukes of the anchor are raiſed and placed on the gunwale, where it is made faſt by the ſhank-painter chain. That the flukes may lie level, the ſtock is bowſed upon by the anchor-ſtock tackle, the double block of which is hooked to a ſelvagee, faſtened round the ſtock of the anchor under the firſt hoop, and connected by its fall to a ſingle block, hooked to a ſelvagee faſtened round the laniard of the main ſtay: the fall leads in upon the forecaſtle.

The beſt bower is then placed forward near the bows on the ſtarboard ſide; the ſmall bower near the bows on the larboard ſide, a little abaft their reſpective catheads; and are ſecured by their ſtoppers, from the catheads and ſhank-painters. The ſtopper has one end clinched round the cathead; the other end paſſes through the ring of the anchor, returns upwards, and leads over a large thumb cleat bolted to the cathead, and is made faſt with ſeveral turns, and the end hitched round the head-rail and timber-head, on the fore ſide of the cathead. The ſhank-painter hangs the ſhank and fluke of the anchor to the ſhip's ſide outboard; and when ſtowed, the ſhank-painter is paſſed under the inner fluke round the ſhank of the anchor, and made faſt with two or three turns, and the end ſtopt round timber-heads on the forecaſtle. With theſe two bower anchors ſhips are generally moored when lying in a tide's way or in a fleet.

The ſheet and ſpare anchors are hoiſted by runners and tackles, main-ſtay and yard tackles, and are ſtowed ſecurely with ſtock and bill laſhings at the after part of the fore ſhrouds, before the cheſs-trees on each ſide of the ſhip, with one of their arms reſting on a chock, bolted to the gunwale; the ſtock being bowſed-to by the anchor-ſtock tackle. The ſheet anchor is ſtowed on the larboard ſide, and is the firſt reſource in a gale of wind, after parting with either of the bowers; for which reaſon, when in port, the ſheet cable is kept bent, and the anchor is over the ſide, ſuſpended by the ſtopper and ſhank-painter, ready for cutting away in caſe of neceſſity. The ſpare anchor is ſtowed on the ſtarboard ſide, and is ſeldom uſed, but when one of the others is loſt.

The ſtream anchor is ſtowed on the ſpare anchor; and, when uſed, it is ſent in the long-boat or launch, with its cable bent, and let go at any particular ſpot, either for ſteadying the ſhip, when riding by only one bower, or to aſſiſt a ſhip when in-ſhore, or to warp her, &c.

The kedge is ſtowed on the ſtream and ſpare anchors, and is frequently uſed to ſtop a ſhip for a tide in little winds; but, if the wind is too powerful for the kedge, the ſtream anchor is ſubſtituted. The kedge is ſometimes uſed in moderate weather, to warp the ſhip ſo as to ſhift her birth.

The cables alſo are brought in craft alongſide; and, ſhould they be new from the rope-walk, let them be coiled down in the craft, the ſame way they are to be coiled on board.

It is recommended to merchant-ſhips, eſpecially of the ſmaller ſize, that their cables ſhould be coiled the way they bit, or the way they run round the windlaſs; and their tiers ſhould be on the ſide oppoſite to that on which they lead. But this practice cannot be approved of for the royal navy, nor is it indeed there adopted; becauſe, when heaving in upon one cable, and veering out upon another, the cables, by being croſſed, are apt to foul in the hatchway. The beſt bower, which is moſtly the working cable, ſhould lead foremoſt up the hatchway on the ſtarboard ſide; then the ſmall bower on the larboard ſide; and, afore the latter, the ſheet; which, being the leaſt uſed, can be triced cloſe round the fore part of the hatchway, out of the way.

A cable generally grinds or kinks from more turns being forced into it by the coiling, than it had when firſt made; and the only way to get rid of thoſe grinds or kinks, is to coil the cable acroſs the hatchway, from ſide to ſide, in large fakes, with the ſun; then take the upper end through the coil, and coil the cable down in the tier the way required. By this means, as many turns will be taken out of the cable, as there are fakes coiled round the hatchway.

It ſhould be a rule in coiling cables, never to lay out near the hatchway, but to keep that part of the tier as low as poſſible, that the bends may have ſufficient room to upſet.

Were all ſtore cables firſt coiled down from the rope walk againſt the ſun, they would be better adapted to coil on either ſide of the ſhip; for a cable coiled againſt the ſun will more eaſily reverſe, and have leſs grinds or kinks in it than a cable coiled with the ſun.

Anchors (except when at ſea) ſhould always have a cable clinched to the ring ready for letting go; and a buoy rope with a buoy.

To CLINCH A CABLE; run it through the hawſe-hole and the ring of the anchor, three or four fathoms in length; then haul the bight up in the head, and paſs the end of the cable over the bight, and through the ring, between it and its own part: then paſs the cable bends, and croſs them with ſtrands, well greaſed, one at the end, and the other about one foot from the end; and be careful not to form the clinch larger than the ring of the anchor.

FROM the MOORINGS a ſhip, when fitted, removes, in order to take in her guns and proceed to ſea; but, before ſhe finally ſets ſail, ſhe generally comes to anchor, and is moored once with her own anchors and cables, which will be treated of hereafter. At preſent it is ſufficient to give the following caution at

GETTING UNDERWAY FROM RIVER MOORINGS.

If it be in a tideway and with a leading wind, ſo that the ſhip can ſtem the tide; let it be a rule, when the tide ſerves, to get underway, and ſail againſt the flood; which gives time to clear a ſhip of her moorings, and affords a more powerful effect to the helm, to ſteer the veſſel clear of other ſhips and any particular danger.

PREPARATIONS NECESSARY TO BE MADE FOR ANCHORING.

On approaching an anchorage, the anchor and buoy are got clear, and a range of cable ſtretched along the deck ſuitable to the depth of water. Care ſhould be taken, that nothing is in the way to check the cable, or ſtop its running out: then, at a proper diſtance, a turn is taken round the bits with the cable, thus: Firſt paſs the cable from the anchor underneath the croſs-piece, then take up a bight of the cable abaft the bits, and throw it over the bit-head. The end of the cable is clinched round the orlopbeams in the royal navy, and round the main-maſt in the merchant ſervice.

It is neceſſary to have water near the bits to prevent its firing by the friction. Stoppers and ring ropes of all kinds ſhould be ready for uſe.

The ſtock laſhing being caſt off, and nothing but the anchor ſtopper and ſhank painter retaining the anchor, men are ſtationed to ſtand by them, and let go at the moment ordered.

To ſecure the cable when out, DECK STOPPERS are thus previouſly prepared: they are turned into the ring bolts on the deck, round a large iron thimble, and faſtened with a throat and end ſeizing. Each ſtopper has a laniard ſpliced round the head, under the knot, by which ſeveral turns are taken round the cable, and the end ſtopt.

BESIDES the deck ſtoppers, others are uſed as an additional ſecurity to the cable; ſuch are the BIT STOPPERS, &c.

BIT STOPPERS. Each ſtopper is reeved through a hole in the ſtandard knee, againſt the fore part of the riding-bits, and is turned in or ſpliced. It has a laniard ſpliced round the head, under the knot. When uſed, ſeveral turns are taken with the laniard round the cable, and the end ſtopt. It is to check the cable in bringing up the ſhip. Another bit ſtopper much approved of, is about four fathoms long, and tailed out like a nipper at one end, and knotted at the other. Let this ſtopper be rove through the hole in the ſtandard knee. To paſs it, let it be held aft, inſide, over the cable, and under the bits, outſide the cable; then worm it round the cable before the bits. Then, as the cable runs out and it is required to check the ſhip, haul tight the worming; and, by the cables drawing forward, it will tighten the ſtopper, and bend the cable ſo cloſe to the bits as effectually to bring the ſhip up. This ſtopper is not likely to jamb, therefore is extremely well calculated for bringing a ſhip up with eaſe; as, by ſlacking, and hauling tight the worming, the cable may be ſuffered to run out, or be checked at pleaſure.

In heaving up in a heavy ſea, when, by a ſudden pitch of the ſhip, the meſſenger or nippers give way, this kind of ſtopper will be found extremely ſerviceable; for, upon theſe occaſions, this ſtopper may be always paſſed ready, and the bight triced up abaft the bits, with a rope-yarn clear of the cable.

Another bit ſtopper, made with a large eye, that it may be thrown over the bit head, and ſhifted over from ſide to ſide, is alſo much approved of.

DOG STOPPERS. One end is clenched round the main-maſt, and the other end wormed in the cuntlines of the cable, and ſtopt in ſeveral places; then brought back with ſeveral turns over its own part, and the end ſtopt. It is of little ſervice, unleſs it be long enough to clap on above the coamings.

WING STOPPERS. One end is clenched round the orlop beams in the wings, and the other end is clapt on as the dog ſtopper.

RING ROPES are occaſionally made faſt to the ring bolts in the deck and to the cable, by paſſing the ends through the ring of the bolt, and through the bight, then clapt on the cable with croſs turns, and the ends ſtopt. Ring ropes may be better ſingle than double; they are paſſed with leſs confuſion of turns. To paſs a ſingle ring rope, and have it in readineſs to check upon veering away the cable, take alſo three ſlack turns through the ring bolt and round the cable, one before the other, and hold up the parts fair; then take as many ſlack turns of worming round the cable, before the ring, and they held up fair, leaving ſufficient room for the cable to paſs through. When the cable is to be checked, haul tight the worming; and by the cables running out, it will readily draw the turns tight through the ring, and bind the cable ſo cloſe to the ring, as to prove an excellent ſtopper. Ring ropes are ſimilar to the laniards of ſtoppers, to check the cable when freſhening the hawſe, or to add ſecurity to the ſtoppers in a heavy ſea.

LENGTHENING OF CABLES. Cables are lengthened by ſplicing one to the end of the other, thus: The cloſeſt and beſt method is to put the ends in twice each way; then, to pick out the ſtrands, and worm part of them round the cable, and taper away the reſt; which ſhould be cloſely marled down, and a good throat and end ſeizing clapt on, of ſix-thread ratline.

The ſtrands of the beſt bower and ſtream cable, had better be pointed, that theſe cables may be more quickly ſpliced and unſpliced, in caſes of neceſſity.

TO PREVENT CABLES FROM CHAFING by friction in the hawſe, and againſt the ſtem or cutwater, they are rounded or ſerved thus: They ſhould be ſerved againſt the lay. The moſt expeditious way of clapping on rounding is with a top, where room to work it will admit; otherwiſe it muſt be beaten on with mallets; and care taken to ſtop the ſervice with ſpun-yarn at every ſix or eight turns.

Mooring ſervices are clapped on about fifteen fathoms from the end or cable ſplice. Large veſſels ſhould have twelve or fourteen fathoms of ſervice, half of it rounded and the reſt plaited and keckled. Upon the beſt bower or working cable, there ſhould be a ſhort ſervice of eight or ten fathoms at the half-cable.

Mats of the width of the cable's circumference, and about three fathoms long, are very convenient to have ready to lace on the cable with expedition, in caſes of neceſſity, in the way of the hawſe or cutwater.

The beſt ſervice to prevent a cable's chafing is cut from a tanned horſe hide, big enough to wrap two or three times round the cable. The method of putting it on is, firſt to parcel the cable with two or three turns of old canvas, the length of the leather ſervice; which, if too ſtiff to put on, only requires dipping in water and beating, which makes it ſoft and pliable: then paſs it tight and ſmooth round the canvas, and ſtop it on with ſennit or three-yarn knittles, well greaſing them, and the ſervice, before veering it into the hawſe-hole. Avoid raiſing the ſurface of the leather by knittles, &c. underneath the canvas.

OF COMING TO ANCHOR.

A ſhip ought always, unleſs under ſome particular circumſtances, to be brought to anchor under an eaſy ſail, ſuch as the three topſails, jib, or fore topmaſt ſtayſail, and ſometimes the mizen, according as the veſſel has more or leſs inclination to fall off or come to the wind.

There are, no doubt, caſes when more ſail may be required; but they are exceptions to and do not deſtroy the general principle. Nor ſhould an anchor ever be dropt to leeward of the place you mean to bring up in; becauſe that would often occaſion a neceſſity of caſting two anchors at once, for fear of dropping ſtill more to leeward.

When the wind is ſo violent as to bring the anchor home, and make the veſſel drive, the cable is veered away; and, in veering away, the turns of the ſtopper laniards are ſlackened, and a portion of the cable ſuffered to go out of the hawſe, to let the veſſel further a-ſtern of her anchor; in which ſituation ſhe bears leſs ſtrain on the flukes, and is leſs liable to drag the anchor; for, the more cable is out, the flukes become deeper buried, and the ſhip rides in greater ſafety.

In letting go an anchor, great care ſhould be taken that the water be not ſo ſhoal as to endanger the ſhip hurting herſelf upon it, and that the anchor be not fouled by the cable getting about the fluke or ſtock.

Nor ſhould the water be too deep, becauſe the cable, when out, ſhould approach as near as poſſible to an horizontal direction. Indeed, this principle is ſo true, that three cables ſpliced together, an end of each other, are kept bent to the beſt bower anchor, to be uſed in caſes of neceſſity; and it is found, that one good anchor, with a long range of cable, is a ſafer anchorage than two anchors with ſhort cables. However, when the ſhip has not room to drive, and, if the night be dark, let fall a ſecond anchor under foot, with a range of cable above the deck. At all events, the deep ſea lead ſhould be thrown over the gunwale, and the line frequently handled, to be certain that the ſhip does not drive.

In hard and rocky bottoms, where anchors cannot have much hold, cables are chafed and cut to pieces. When neceſſitated to anchor in ſuch places, a chain ſhould be run up the cable from the ring of the anchor to a certain diſtance, to ſecure it from danger. When a chain is not to be had, (although the top chains may ſerve) empty caſks well bunged are good ſubſtitutes, ſlung and faſtened to the cable at equal diſtances, to ſupport and keep it from the bottom.

When ground is ſoft and oozy, and anchors will not hold ſecurely, but come home with little wind, it is common to cover the flukes, with a broad triangular piece of plank, much larger than the fluke. Sometimes the anchor is backed, or retained, by carrying out the ſtream, or kedge, a-head of the anchor the ſhip uſually rides by. In this ſituation, the bower anchor is confined by the ſtream, or kedge, in the ſame manner as the ſhip is reſtrained by the bower anchor.

In preparing to come to anchor, when the wind is not violent, the topſails ought always to be clued up at the maſt heads; that is, let go the ſheets and haul the clue lines and bunt lines cloſe up; lower away the topſails and take in the ſlack of the braces as the yards come dow.. In this manner you run leſs danger of ſpliting and tearing the ſails than by any other method.

In all operations hereafter treated of, it ſhould be obſerved, that whether the wind is moderate or blows freſh, it makes this only difference, viz. The velocity of the ſhip's movements, in the latter caſe, being conſiderably increaſed, the ſails will require an earlier diminution, to ſtop the headway; and that of courſe leſs time in general is taken up in performing every operation.

TO ANCHOR IN FINE WEATHER, IN A PLACE WHERE YOU WILL RIDE HEAD TO WIND, BEING CLOSE HAULED.

BEING under the three topſails, fore-topmaſt ſtay-ſail, and mizen, ſtand on until you are within about two ſhips lengths of the place where you mean to drop your anchor; then put the helm a-lee, and haul down the fore-topmaſt ſtay-ſail. As ſoon as the topſails ſhiver, clue them up briſkly, before you lower; except the mizen topſail, which is to be laid to the maſt, and the mizen ſheet hauled flat aft, the inſtant the ſhip begins to have ſtern-way, by reaſon of the wind being a-head. Then ſhift the helm to windward, and let go the anchor, veering away the cable, to give it time to ſettle in the ground, until the veſſel falls off, when ſhe is to be checked, to bring her head to the wind. When that is done, right the helm, and haul up the mizen.

DEMONSTRATION.

THE ſhip is hove up in the wind by hauling down the fore-topmaſt ſtay-ſail (§ 31.), when nearly two ſhips lengths from the ſpot where the anchor is to be dropped, becauſe the head-way is ſufficient to ſhoot her that diſtance; and as, by this movement, the ſhip is generally bound to ſtop a little to windward of the place where you mean to bring up, you wait till ſhe begins to go a-ſtern a little before you let go the anchor, and the helm is at the ſame time ſhifted hard over the other way (§ 58.) to moderate the ſhip's falling off when ſhe is head to the wind. The topſails are clued up as ſoon as they begin to ſhiver, not only becauſe it can at that time be done eaſiy, ſince they come in of themſelves as they lower; but becauſe, if delayed longer, the ſtern-way would become too rapid, ſince the ſails would be all a-back, and would ſoon drive the ſhip to leeward of her intended anchorage. Beſides, the celerity of her falling off would be ſuch, as to cauſe her to drag the anchor before it had got a proper hold of the ground; and that is the reaſon why the cable is veered away in order to give the anchor time to ſink into the bottom by its weight. The mizen topſail is braced perpendicular to the keel; becauſe, in that ſituation, the ſhip is impelled (§ 36.) a-ſtern exactly in the direction of her keel. The mizen ſheet is hauled flat aft, to bring the ſhip's head ſooner to the wind (§ 40.); and, as ſoon as ſhe arrives at that point, that ſail ſhivers; in which caſe it is immediately brailed up, as being no longer of uſe. The helm is righted, having no longer any power; ſince the veſſel is now brought up, and all the ſails are furled, except the mizen topſail, which is flat a-back to the maſt, to keep the ſhip ſteady at her anchor.

TO ANCHOR IN FINE WEATHER IN A PLACE WHERE YOU WILL RIDE HEAD TO WIND, THE WIND BEING LARGE.

IF you have the wind large, whether on the beam, or more aft, the operation is ſtill the ſame, only hauling up a little ſooner to keep to windward, becauſe it is in your power to drift as much as you think requiſite, and becauſe the ſhip will be entirely ſtopped as ſoon as all her ſails begin to catch a-back, and you will have done cluing them up when they begin to ſhake. The mizen topſail is next to be heaved to the maſt, the helm put a-weather (§ 58.), and the anchor let go, as ſoon as the head-way ceaſes: then, after giving her a ſufficiency of cable, bring the ſhip up. If ſhe has been going large, ſhe will not range precifely head to wind, ſince her headway ceaſes as ſoon a, the ſails are taken

a-back, and the effort of the wind acts on all the rigging of the ſhip to impel her both a-ſtern and to leeward, which is indeed augmenting the effect of the rudder, as the helm is a-weather to bring the veſſel to the wind (§ 58.): but, as the power of the wind is very great to pay the ſhip's head off, it balances wholly or partly (according as the ſhip goes a-ſtern with more or leſs velocity) the effort of the rudder and that of the mizen: thus ſhe drifts, and remains as it were lying-to with all her ſails a-back. This is the reaſon why we keep a little to windward, and let go the anchor, to bring the ſhip head to wind at the proper time; which ſhe will do the more readily as ſhe is withheld forward only by the cable, while the wind on her ſide forces her to leeward.

TO ANCHOR IN FINE WEATHER IN A PLACE WHERE YOU ARE TO RIDE HEAD TO THE STREAM AND WIND, THE WIND BEING LARGE.

IF you are obliged to ride with the head to the ſtream, you muſt, when it comes from to windward, put the helm a-lee in ſetting the mizen, then clue up all the ſails; and, when the ſhip's head is right in the direction of the ſtream, let go the anchor, provided ſhe has quite loſt her head-way; for, elſe, you would get foul of the anchor ſtock by running over it. This muſt never be neglected, unleſs you find yourſelf under the neceſſity to bring up in any ſituation in which you may happen to be, which is almoſt always the caſe when you are taken too ſhort to have time to ſtop the veſſel: a reaſon why there is often a neceſſity of caſting a ſecond anchor, which generally catches the ground by aſſiſtance of the firſt, which has began to diminiſh the velocity of the ſhip; and as many of the ſails are to be hauled down as you can, and as quick as poſſible.

TO ANCHOR IN FINE WEATHER IN A PLACE WHERE YOU WILL RIDE HEAD TO THE STREAM, WHICH COMES FROM LEEWARD, THE WIND BEING LARGE.

When the current comes from to leeward, you muſt keep the ſhip away till her head comes to the ſet of the ſtream, and take in all the ſails, to diminiſh as ſpeedily as poſſible her head-way, which always continues of itſelf long enough when the wind is aft or very large; and when the ſhip is ſtopped by the effort of the water, let go the anchor without waiting for the veſſel gathering ſtern-way, if the current is rapid; and, in this caſe, as well as all thoſe wherein there is a ſea, or blowing freſh, the ſhip requires a great length of cable.

TO COME TO AN ANCHOR WITH THE WIND AFT.

FIRST hand the main topſail, and then lower the fore topſail down on the cap; and, when you are within a reaſonable diſtance of the place where you mean to drop anchor, (which diſtance is to be judged of from the readineſs of the ſhip to obey the helm, and from her velocity,) the tiller may be put either one way or the other (§ 50.), the fore topſail and fore topmaſt ſtayſail clued up and taken in, the mizen topſail braced ſharp up, and the mizen ſheet hauled flat aft. When the ſhip ranges cloſe to the wind, ſhe is, as it were, lying-to under the mizen and mizen topſails, with the laſt mentioned ſail full, or a-back, according as you may have occaſion to ſhoot a-head or drop a-ſtern;

ſo that, if you are too much to windward of the ſpot where you mean to bring to, you drift till you arrive at it: if you are preciſely in the proper birth, you let go the anchor in lowering down the mizen topſail, which is to be furled as ſoon as the veſſel is brought up; then the ſhip will come head to wind by the power of the mizen, which muſt be brailed up as ſoon as it ſhakes.

DEMONSTRATION.

THE main topſail is taken in, and the fore topſail lowered down, to diminiſh the great velocity which a ſhip commonly has when the wind is aft, in order to eſtimate the diſtance with greater preciſion, and to have her movements more under command. When you think yourſelf at the neceſſary diſtance the ſhip requires to ſtop cloſe hauled, at the place you wiſh to anchor, you put the helm on board one way or the other, (§ 50.); you brace ſharp the mizen topſail for the tack you haul upon (§ 41.), and haul the mizen out to bring the ſhip rapidly to the wind (§ 40).

In the ſame moment, the fore topſail is to be clued up and handed, and the fore topmaſt ſtayſail hauled down, becauſe they oppoſe the movement of the ſhip (§ 31, § 32, & § 33.) as ſhe is coming to. When you are cloſe to the wind, the anchor is let go, if you are in the birth you wiſh: If too far ſtill to windward, you can drift, keeping the mizen topſail full; and, when you are to windward, ſhould you find yourſelf too far a-head, lay the mizen topſail a-back, to go aſtern (§ 44.) putting at the ſame time the helm a-weather (§ 58). When the veſſel has drifted ſufficiently, let go the anchor, and furl the mizen topſail; becauſe the cable might be injured, ſhould it blow freſh: then the ſhip will ſoon range head to wind, though the mizen be ſtill out (§ 40.) and, when that is attained, the mizen is brailed up to prevent the ſhip ſheering; and the helm is righted for the ſame reaſon.

In ſome caſes you are obliged to come to an anchor with the wind aft, ſtanding end on, becauſe there is not always a ſpace neceſſary to deaden the ſhip's way. In this ſituation the ſails are to be taken in as ſoon as poſſible, in order to leſſen the velocity of the ſhip. When come to your birth, let go the anchor, and veer away the cable plentifully, that the anchor may have time to take the ground; then begin to check her gently, veering ſtill more cable as the ring ropes or ſtoppers, placed on it before-hand, break away; for they ſhould be permitted to break, in order that you may not be expoſed to drag your anchor, by bringing the veſſel up at once.

SCUDDING UNDER A FORE SAIL, TO COME TO AN ANCHOR.

THE foreſail muſt be clued up when at ſome diſtance from your birth, and ſome part of the way, run under bare poles. When near enough to ſheer to the wind, you execute it by putting the helm hard a-lee; and, as ſoon as the ſhip is come to, let go the anchor, giving her a large ſcope of cable, and obſerving to check her handſomely, in order to make her ride head to wind: as ſtopping her at firſt too ſhort might very well endanger her cable or anchor. Should the firſt not bring her up, a ſecond muſt be let go.

DEMONSTRATION.

AS you cannot run for an anchorage under a foreſail, unleſs before the wind, or very free, you are neceſſarily obliged to furl that ſail at a great diſtance; becauſe, in that poſition, the velocity of the ſhip will, by the violence of the wind, be but too much kept up, ſo as to make you run the reſt of the way,

which may perhaps be a quarter or half a league, under bare poles, the wind being nearly aft. If you were obliged to run at that diſtance cloſe hauled, you would never reach your birth, ſhould the foreſail even be ſet; becauſe, the ſhip would be laid-to, as was ſhewn before. You put your helm over to ſheer to windward when you think you are at the neceſſary diſtance, that you may have time to deaden the ſhip's head-way: and as, when ſhe ſtops coming to, her head-way ceaſes, you let go the anchor, and veer away a great extent of cable; becauſe, when it blows hard, there is commonly a great ſwell, and the pitching motion it gives to the ſhip, joined to the effort of the wind on the rigging, would bring home the anchor. You are therefore obliged to veer away a great length of cable, to give the anchor time to ſettle, and to cauſe the cable to make a very acute angle with the ground, by which the ſtrain is much reduced.

TO ANCHOR WITH A SPRING, IN ORDER TO PRESENT THE VESSEL'S SIDE TO A PLACE OR SHIP YOU WISH TO CANNONADE.

THIS is executed when you know that the wind or current will bring your head, when at anchor, towards the object you mean to attack: for, ſhould the wind or tide bring your broad-ſide to bear on the object you mean to cannonade, the ſpring would only be a precaution, to get under way more quickly in caſe you were obliged to retreat; or in caſe the wind or tide ſhould ſhift.

Get a large ſnatch-block in the aftermoſt port, on the ſame ſide you wiſh to preſent to the wind or current, and on the ſame ſide with the anchor and cable with which you mean to bring up; then, through the block, reeve a hawſer, the end of which is to be clinched to the ring of the anchor you mean to let go; the other part is brought to the capſtern, with neceſſary ranges of the cable and hawſer on deck. That done, and the ſhip being arrived at the birth, you are to deaden her way according to circumſtances: you let go the anchor, and veer away enough cable and hawſer, now a little more of the one, and then a little more of the other, according as you wiſh to preſent more head or ſtern; which you can do by heaving on the ſpring, or, what is the ſame, veering away more cable; but ſhould you find it requiſite to ſhift your poſition, you have only to veer out more of the hawſer.

TO COME TO AN ANCHOR IN ROADS THAT ARE OFTEN CROWDED WITH SHIPS, AND TO LEAVE CLEAR BIRTHS FOR OTHERS.

THE beſt anchoring births in theſe places are moſtly known by marks, and of courſe are occupied by the firſt ſhips.

In a tide or trade-wind road-ſtead, the next ſhip that comes ſhould not anchor right a-head or a-ſtern of the firſt ſhip and ſo as to lie in the other's hawſe, but ſhould come-to on the bow and quarter, at a ſufficient diſtance to prevent other ſhips from coming between, and in a ſlanting direction from the tide or wind. This might contribute to the ſafety of ſhips when it blows ſtrong upon a lee-tide or in ſtrong ſea breezes, as each ſingle ſhip may then veer away what cable neceſſary, and keep clear of the other ſhip's hawſe a-ſtern; or, in caſe of driving or caſting, they have a better chance of keeping clear of each other.

A good anchoring birth in a crowded road-ſtead is obtained by firſt running down through the middle of the fleet, and taking notice where a good birth is left vacant by ſome ſhip that has ſailed

from the middle of the fleet; then ſteer out from among the ſhips, and turn to windward ſo far, as to give time to take in and furl all the ſails, and run down before the wind amongſt the ſhips without any ſail, and let go the anchor at the intended birth.

TO COME TO AN ANCHOR WITH THE WIND ACROSS THE TIDE.

THE ſhip ſhould if poſſible, be put upon the tack that ſtems againſt the tide when the anchor is let go; and, if it be deſigned to continue at a ſingle anchor, in order to keep it clear, ſheer the ſhip and keep her to leeward of the anchor, by keeping the helm a-weather and the fore topmaſt ſtayſail ſet, with the ſheet to windward.

Much benefit may reſult from letting go the anchor ſtemming againſt the tide, eſpecially with a rapid tide, for it gives an opportunity to obſerve, at what rate the ſhip drives a-ſtern, ſo as to judge whether it may not be neceſſary to keep ſail ſet, in order to bring the ſhip up to ride eaſy in a rapid tide, and to keep her clear of ſhoals, &c. a-ſtern.

TO COME TO AN ANCHOR WHEN THE WIND IS RIGHT AGAINST THE TIDE, THE SHIP DRIVING WITH THE STRENGTH OF THE TIDE AGAINT THE WIND.

SHOOT the ſhip a-head of her anchor, or ſheer her clear of it, upon the ſame tack, as ſhe is meant to ſhoot upon, the next tide, always endeavouring to keep the ſhip, in ſwinging with the tide, on one ſide of the anchor, to clear it. Suppoſe that the ſhip, driving to windward, has got to an anchoring birth, or that the tide is ſo far ſpent that ſhe will drive no further to windward, and muſt come to an anchor on the ſtarboard tack. In letting go the anchor, the ſhip ſhould be ſhot a-head of it, and kept a-head with the helm a-weather, the yards braced full with the larboard braces, the fore topmaſt ſtayſail and mizen ſet full, till the windward tide is done; then ſhe falls to leeward and rides windroad, with the wind and anchor right a-head in which poſition ſhe will lie clear of the anchor till the next windward tide.

TO COME TO AN ANCHOR WITHOUT TENDING.

IF it happens that a ſhip is to be brought up in a place where there is not ſufficient room to tend her, reduce her head-way as much as poſſible, before ſhe comes to her anchoring birth, ſo that a leſs ſcope of cable will bring her up.

DESCRIPTION OF A FLOATING ANCHOR TO RIDE A VESSEL BY IN A GALE OF WIND.

THIS ſimple machine is made to dive beneath the ſwell of the ſea, and retain the veſſel where there may be no other anchorage.

It conſiſts of two flat bars of iron, each in length half the breadth of the midſhip beam of the veſſel for which it is uſed, and rivetted together in the middle by an iron ſaucer-headed bolt, clenched at its point, that they may be ſwung parallel to each other for eaſy ſtowage. At each end of the bars is

a hole for a rope, or ſwifter, to paſs through, which muſt be hove tight, to extend the bars at right angles. To this ſwifter is marled a double or fourfold canvas cloth (N° 1.) of the ſame ſhape, ſo as to be on that ſide of the iron bars neareſt the veſſel when uſed.

In each bar are two holes, at equal diſtances from the center; and to theſe holes the ends of two pieces of rope are faſtened: the ropes are ſeized together in the middle ſo as to form a crowfoot, having an eye in the center, which is well ſerved with ſpunyarn, and to this is bent, when the anchor is uſed a cable or hawſer, by which it is made to ſink and incline in the water. See the Plate.

In the end of one of the bars is fitted an iron ring, to which a buoy is made faſt, by a rope about 12 fathoms long, to prevent the anchor from ſinking to the bottom. When it is thrown overboard, the cable and a rope made faſt to the head of the buoy, are veered away ſufficiently to ride the veſſel.

To get it on board, haul upon the buoy-rop, which will bring it to the water's ſurface ſo as to be eaſily drawn to the veſſel. Have the mizen ſtayſail ready to hoiſt, to keep the veſſel to the wind till the anchor is hauled on board.

INSTRUCTIONS FOR THE MANAGEMENT OF SHIPS AT SINGLE ANCHOR.

OF SHEERING A SHIP.

IF the ſide of a ſhip at anchor is preſented to the tide by any means, the water will act upon her two ways; one in the direction of her keel, the other in the direction of her beams; the laſt will cauſe her to ſheer out to one ſide of her anchor, which was a-head before. Suppoſe, for example, the power which preſents the ſhip's ſide to the tide to be a ſpring; from the anchor coming in aft on the ſtarboard ſide upon heaving in the ſpring, the ſhip will ſheer over to port, bringing the anchor upon the ſtarboard bow: the more the ſpring is hove in, the more the ſhip will go a-head, and over to port, until her ſide makes an angle with the tide of 45 degrees, as the furtheſt ſhe can go over from her anchor: for the ſpring hove in after this will cauſe the ſhip to return, and be in the ſtream of her anchor when ſhe is hove round a broadſide to the tide. Now, if the helm is put over to ſtarboard, it will act as the ſpring, by forcing the ſhip's ſtern to ſtarboard; and thus, by cauſing the water to act upon her ſtarboard ſide, the ſhip will be forced over to port: on the contrary, had the helm been put to port, the larboard ſide would be preſented to the action of the water, and the ſhip will go over to ſtarboard; but the power of the rudder being according to the ſtrength of the tide, its action leſſens upon the rudder, as the ſhip ſheers obliquely to the ſtream, and cannot produce ſo great an effect as the ſpring.

RIDING AT ANCHOR IN MODERATE WEATHER.

WHEN riding in a tideway with a freſh of wind, the cable ſhould have a ſhort or windward ſervice, of about 45 or 50 fathoms from the manger-board outwards, always ſheered to leeward, (not to windward, as thought by ſome) not with the helm hard down conſtanly, but more or leſs ſo, according to the ſtrength or weakneſs of the tide. Many ſhips have ſheered their anchors home, driven on board other ſhips, or on ſands near which they rode before the anchor was diſcovered to have moved from the place where let go.

TO BACK A SHIP

WHEN the wind is croſs, or nearly off ſhore, or in the oppoſite direction, ſhips will always back by the mizen topſail, aſſiſted if neceſſary by the mizen ſtayſail. If no mizen topſail, the main topſail is uſed.

In backing, always keep a tight cable to wind the ſhip that the anchor may be drawn round. If the wind is not ſufficient for this purpoſe the ſhip muſt be hove a-peek.

OF BRACING THE YARDS.

RIDING with the wind afore the beam, brace the yards forward: if abaft the beam, brace them all a-back.

OF RIDING WHEN IN DANGER OF BREAKING THE SHEER.

IF the wind is ſo far aft that the ſhip will not back, ſhe muſt be ſet a-head; but never attempt to back, if, when the tide ceaſes, the ſhip forges a-head, and brings the buoy on the lee quarter. If the wind is far aft and blows freſh, the greateſt attention is required; as ſhips, riding in this ſituation, often break their ſheer and come again to windward of their anchors; to prevent which, the after yards muſt be braced forward, and the fore yards aft: thus ſhe will be ſafe, ſo long as the buoy can be kept on the lee quarter; or, ſuppoſe the helm to port, ſo long as the buoy is on the larboard quarter. With the helm thus, and the wind right aft or nearly ſo, the ſtarboard main and fore braces ſhould be hauled aft if led aft, and forward if they lead forward.

HOW TO MANAGE A SHIP WHEN HER SHEER IS BROKEN.

IF the ſhip tends to leeward, and the buoy comes on the weather quarter, and ſhe breaks her ſheer, brace about the main yard quickly; if ſhe recovers and brings the buoy on the lee or larboard quarter, let the main yard be again braced about; but if ſhe comes to her ſheer the other way, by bringing the buoy on her ſtarboard quarter, change the helm and brace the fore yard to.

OF TENDING TO LEEWARD WHEN THE SHIP MUST BE SET A-HEAD.

WHEN the ſhip begins to tend to leeward, and the buoy comes on the weather quarter; firſt brace about the fore yard; and, when the wind comes near the beam, ſet the fore ſtayſail, and keep it ſtanding until it ſhivers, then brace all the yards ſharp forward, eſpecially if it is likely to blow hard.

It ſometimes happens that when the fore ſtayſail is ſet too ſoon, the ſhip's head will pay round off, and ſhe will break her ſheer: to prevent this, and to keep the wind broad upon the beam, it will often be neceſſary to ſet the mizen ſtayſail alſo; which ſhould be hauled down as ſoon as the wind comes before the beam, otherwiſe the ſhip's head will be thrown in the wind too ſoon.

WHEN THE SHIP IS LIKELY TO GO TO WINDWARD WITH A LONG SERVICE OUT.

RIDING leeward tide with more cable than the windward ſervice, and expecting the ſhip will go to windward of her anchor, begin, as ſoon as the tide eaſes, to ſhorten in the cable. This work is ſometimes hard, but very neceſſary; otherwiſe the anchor may be fouled by the great length of cable the ſhip has to draw round, or the cable would be damaged by the bows and cutwater.

When a ſhip rides windward tide, the cable ſhould be *keckled* from the ſhort ſervice towards the anchor, as far as will prevent its touching the cutwater.

When the ſhip tends to windward, and muſt be ſet a-head, hoiſt the fore ſtayſail as ſoon as it will ſtand; and, in moderate weather, the gib alſo; and, when the buoy comes on the lee quarter, haul down the fore ſtayſail, and jib, if ſet, brace-to the fore yard, and put the helm a-lee; for, till then, the helm muſt be kept a-weather, and all the yards full.

TO MANAGE IN A STORM.

WHEN a ſhip rides leeward tide, and the wind increaſes, give her more cable, otherwiſe the anchor may ſtart by not doing ſo in time, and the ſhip will not eaſily be brought up again: this is the more neceſſary when riding in the hawſe of another ſhip. Previouſly to giving a long ſervice, it is uſual to take a weather bit, or a turn of the cable round the windlaſs end, that, in veering away, the ſhip may not overpower you. Greaſe the ſervice, to prevent its chafing in the hawſe.

If the gale increaſes, the topmaſts ſhould be timely ſtruck, but the fore yard ſeldom, if ever, ſhould be lowered down, that, in caſe of parting, the foreſail may be always ready. At theſe times, let there be more people on deck than the uſual anchor-watch, that no accident may happen from inattention.

TO TEND A SHIP FOR A WEATHER TIDE.

A SHIP riding at anchor upon a lee tide, with the wind in the direction of the tide, requires, upon the tide's ſetting to windward, to tend clear of her anchor: for this purpoſe, when the weather tide ſets, and brings the wind broad upon either bow, hoiſt the jib and fore ſtayſail, and brace full the yards to ſhoot the ſhip a tight cable from her anchor: then put the helm a-lee, and wait until the buoy comes upon the lee-ſide: this done, brace-to the head yard, and keep the after yards full to aſſiſt the helm. If the buoy bears nearly a-beam, the jib and fore ſtayſail may be hauled down; but, if the wind is freſh, and ſhoots the ſhip nearly end-on with the cable, bringing the buoy upon the quarter, keep up the fore ſtayſail; as, in this ſituation, the ſhip will be in danger of breaking her ſheer againſt the helm; and the fore ſtayſail will be ready to catch her before ſhe can fall to windward of her anchor. As the weather tide ſlacks, the ſhip will gradually fall wind-road; then haul down the fore ſtay-ſail and right the helm: ſhould it blow freſh, let the yards be braced forward, and give the ſhip ſufficient cable.

TO TEND A SHIP WITH THE WIND A *FEW* POINTS ACROSS THE TIDE.

IF a ſhip riding at anchor upon a lee tide, with the wind two or three points upon the bow, is to be caſt for a weather tide; when the tide is done, the ſhip will become wind-road, and of courſe muſt caſt with her head to the weather ſhore. As the lee tide makes and brings the wind on either ſide, put the helm a-lee, hoiſt the jib and fore ſtayſail with the ſheets to windward, brace aback the head yards, and fill the after yards. When the ſhip has ſheered tight to windward of her anchor, haul down the jib and fore ſtayſail; and as the wind is broad upon the quarter, ſhe will lie quiet the remainder of the tide. As the weather tide ſlacks, the ſhip will ſhoot end-on with the cable, bringing the buoy upon the weather quarter. When the wind is abeam, if it is thought neceſſary, the jib and fore ſtayſail ſhould be hoiſted to force the ſhip a tight cable from her anchor; and hauled down when they ſhiver. Should it blow freſh, give the ſhip ſufficient cable before the lee tide makes, and point the yards to the wind.

TO TEND A SHIP WITH THE WIND ACROSS THE TIDE.

THE ſimpleſt way of tending a ſhip, is to keep each tide to leeward of her anchor. At each ſlack water the ſhip will become wind-road, and as ſhe tends, and brings the wind on either ſide, put the helm aweather, and hoiſt the fore ſtayſail with the ſheet to windward, to force the ſhip a tight cable from her anchor. When the tide is ſet, and the ſhip upon a proper ſheer to leeward of her anchor, the fore ſtayſail may be hauled down.

GENERAL OBSERVATIONS.

IF at any time the anchor-watch ſhould wind the ſhip, or permit her to break her ſheer, the anchor ſhould be hove in ſight immediately, or on the firſt opportunity.

When lying in a roadſtead, the anchor ſhould be hove in ſight once a week, though there be no ſuſpicion of its being foul, for ſometimes the cable is damaged by ſweeping wrecks, or loſt anchors, or from rocks or ſtones. It is often needful to trip the anchor, to take a clearer birth, particularly when any ſhip brings up too near; but if there is the leaſt ſuſpicion of the ſhip's having come near her anchor, it ſhould be ſighted the firſt opportunity.

A good roadſtead is much better than a bad harbour, and more ſafe: therefore never leave a good roadſtead for the latter, without real neceſſity, which can only be when you can ride no longer, and have no lee road to fly to.

There are roadſteads where an anchor will bury itſelf, ſo that the bight of the cable cannot foul it. In ſuch places, where there is room, it is better to lie at ſingle anchor, than to moor.

If it is poſſible, always ſhoot a ſhip on the ſame ſide of her anchor each tide, to prevent danger from the anchor's not turning as the ſhip ſwings; for the anchor by not turning in the ground endangers fouling the cable round the upper fluke or ſtock, which will either trip the anchor or damage the cable: and it often happens, when an anchor is tripped out of ſtiff ground, that it will not take hold a ſecond time, without the upper fluke ſhould cant down; for the quantity of clay ſticking to the fluke prevents its ſetting into the ground again; ſo the anchor keeps tripping over the ſurface, and another anchor muſt be let go before the ſhip can be brought up. As a ſhip, by being ſheered, preſents one bow to the tide, if the wind is againſt the tide, it muſt blow upon the oppoſite quarter.

It is not always neceſſary to uſe the yards in tending a ſhip, to ſhoot her a tight cable from her anchor. In general the jib, fore ſtay-ſail, and main topmaſt ſtay-ſail, will be ſufficient for the purpoſe. Should the wind ſhift at any time, it will be neceſſary to alter the ſheer of the ſhip accordingly.

ON MOORING.

WHEN a ſhip is come to anchor in a place where ſhe is intended to remain, prudence dictates that ſhe ſhould be well ſecured. For this purpoſe the putting down additional anchors is calculated, and has been denominated MOORING. The various ſituations of places, ſettings of tides, &c. occaſion the neceſſity of the following particular directions.

When the beſt bower is gone, and about two cables length is run out, the ſmall bower is let go; and, when that has taken the ground, you heave in one cable's length upon the beſt bower, and veer away a cable's length of the ſmall bower; and thus the ſhip is kept at an equal diſtance between both, the one lying to the head, and the other to the ſtern.

In roads where there is much tide, and freſhes are expected, ſhips moor according to the ſet of the current, one anchor riding to the flood, and the beſt anchor and cable to the ebb.

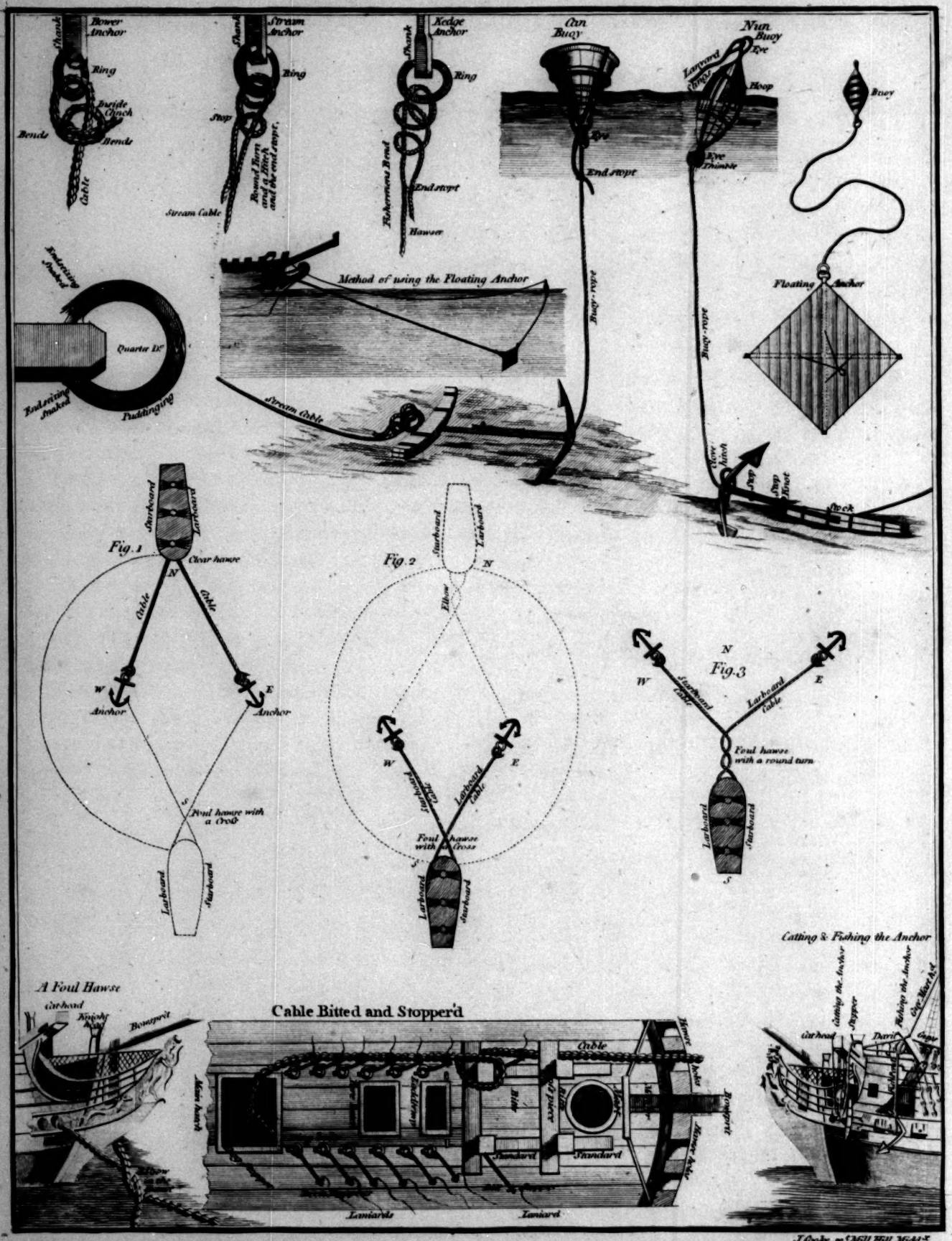
In roads where there is little or no tide, ſhips moor according to the ſet of the moſt prevailing wind on the coaſt.

It may ſo happen, according to circumſtance and ſituation, that the veſſel muſt ride by a greater ſcope on one cable than the other, but ſtill the manner of letting go the anchors is the ſame.

Another method of mooring is, by carrying the laſt anchor out in a boat to the place appointed, and there letting it go. Steadying or mooring with a kedge is uſually done in this manner.

OF MOORING WITH TWO, THREE, OR MORE ANCHORS A-HEAD.

THIS is done by letting go the number of anchors neceſſary, and veering away; this being no ordinary practice, but only adopted in caſes of danger, and peculiarity of circumſtance; time, place, and ſituation, muſt be the only guide to ſuch an operation: as one inſtance, ſuppoſe a ſhip cannot clear the ſhore under her lee by ſailing, owing to a ſtrong wind and high ſea, the only reſource is to let go all the anchors to the beſt advantage. For this purpoſe, let the cables that are bent be got clear for running. Then furl all the ſquare ſails, as quick as poſſible, and ſhoot the ſhip along the ſhore under the ſtayſails. When the ſquare ſails are furled, let go the weathermoſt anchor, and veer away the cable quickly; then let go the next weathermoſt, and ſo on, till all the anchors are gone nearly in a line along the ſhore: thus when the ſhip becomes windroad, all the cables may be made to bear an equal ſtrain, and are ſeparated from each other.



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TO BACK AN ANCHOR.

TO back an anchor, is to let go a ſmall anchor a-head of a large one, to which it is faſtened, to partake of the ſtrain, and to ſerve as a check upon it, ſhould it come home.

The backing anchor is carried out in a long boat, to the buoy of the one already down, whoſe buoy rope is caſt off and bent to the cable or hawſer of the backing anchor; that done, the boat is rowed farther a-head, till the buoy rope and cable of the backing anchor become tight, when it is let go, the buoy that was taken from the large one being previouſly bent to it.

In this ſituation, ſhould the large anchor come home, the ſcope of cable from it to the anchor a-head, participating of the ſtrain communicated to the innermoſt one, checks its progreſs, and enſures to the veſſel a greater ſecurity.

Where there is more room to drive without danger, and it blows ſo hard, that the ſea runs too high for boats to work, an anchor is backed by clenching, round that part of the cable next the hawſe hole, the end of a cable bent to another anchor on board. This being done, the ſecond anchor is let go under foot; the ſhip is then ſuffered to drive, and the cable, by the driving of the ſhip, becomes tight from the ring of the anchor laſt down to its own anchor, which, by the driving alſo, is now become a cable's length a-head of the former anchor.

TO MOOR IN A TIDE'S WAY.

TO bring a ſhip up at high water, with an intention to moor with the beſt bower to the ebb, let go the beſt bower, and bring her up with the cable ſtoppered, until the ebb makes ſtrong; then veer away two cables; and, if poſſible, aſſiſt her aſtern with the mizen-topſail. If, when the two cables are out and the ſhip in the ſtream of her anchor, it is thought, when moored, ſhe will ride too near any other veſſel, ſheer her over from that veſſel, and let go the ſmall bower anchor; then ſhip the capſtern bars, bring-to the beſt bower, veer away the ſmall bower, and heave in the beſt bower to the whole cable ſervice; then bitt and ſtopper the cables, leaving ſufficient ſervice within board, to freſhen the hawſe.

TO MOOR WITH AN OPEN HAWSE TO ANY PARTICULAR QUARTER.

SUPPOSE, for example, the roadſtead or river intended to moor the ſhip in, to lie north and ſouth, (in which direction the anchors are to be laid,) and that her beſt bower is carried on the larboard ſide, and it is meant, when moored, the ſhip ſhall ſwing with an open hawſe to the eaſtward. In this caſe the beſt bower muſt be the northern anchor; but, if the hawſe had been required to be open *when her head was ſwung* to the weſtward, the beſt bower muſt have been the ſouthern anchor.

OF KEEPING A CLEAR HAWSE.

WHEN a ſhip is moored, ſhe is often thought to be in ſuch a ſtate of ſecurity, that the keeping a clear hawſe is too often neglected.

If the hawſe is clear, the ſhip muſt ever ſwing with her ſtern to the ſide on which the headmoſt cable leads.

If, to keep a clear hawſe, the ſhip ſhould ſwing with her ſtern to windward, it will be impracticable to get her the right way by any ſail that can be ſet; for, as the tide ſlackens, ſhe will fall wind-road; and, when the tide ſets, it will take her upon the wrong ſide. However, if the wind continues, ſhe cannot foul her hawſe any more, as, at the next tide, the ſame wind will undo the croſs it cauſed. When the wind is either a-head or a-ſtern, by the aſſiſtance of the mizen topſail or jib, the ſhip can moſtly be made to ſwing the right way. For example, ſuppoſe the wind a-head, or even a little upon the ſtarboard bow, and that the ſhip's ſtern is to ſwing to ſtarboard: in this caſe, ſet the mizen topſail, with the ſtarboard yard arms braced forward, haul up the ſtarboard bowline, and hoiſt the jib with the ſheet to windward; then, before the lee tide is done, put the helm to ſtarboard, to give the ſhip a ſheer, which will be preſerved by the poſition of the ſails. At ſlack water ſhift the helm: thus, when the tide makes, it will act againſt the larboard ſide of the rudder and ſtern, and very much aſſiſt to ſwing the ſhip the right way. Again, ſhould the wind be a-ſtern, and a little upon the wrong quarter, if the helm be attended to, and the mizen topſail braced full the right way, in all probability the ſhip will ſwing as wanted.

If the helm were only properly attended, it would often ſave the labour of clearing the hawſe.

It would be highly neceſſary, at all times, to have a ſmall anchor and rope ready abaft, to run out and haul the ſhip round in calm weather.

HOW THE WEAKEST MOORINGS MAY BE BEST APPLIED TO HELP A SHIP TO RIDE OUT A STORM.

IT may happen that the ſmall bower cable may be too much worn, or the ſmall moorings known to be too weak, to ride a ſhip out a ſtorm, when the anchor at the beſt cable is in danger, or expected to come home. In this caſe, to make the weak moorings ſerve for a backing to the beſt anchor and cable; contrive a traveller, of ſufficient fized rope, to go ſlack round the beſt cable, without the hawſe, and well ſecure it with rolling hitches ſeized to the weak moorings, that may be veered away, or let go, as occaſion may require; if ſhort of rope to make a proper traveller, a large ſtopper may be clapt on without the hawſe, till the end of the ſmall moorings is faſtened round the beſt bower cable, with a bowline knot open enough to ſlide along the beſt cable, until it comes to the ring, which may prove ſuch a ſure backing, as to prevent its coming home.

When a ſhip is moored, attention muſt be paid to her ſwinging at the turn of tide, or ſhift of wind, to prevent the cables overlaying each other, or getting a foul hawſe, which is prejudicial, as the cables chafe each other, and as the veſſel is not in that perfect ſtate of ſecurity enjoyed by riding with an open hawſe. The explanation of this turn will be better comprehended by a reference to the plate.

For example: if a ſhip be moored eaſt and weſt, and ſwings to the northward, the cable of the anchor lying to the eaſtward, is from the hawſe-hole on the larboard ſide, and that to the weſtward from the hawſe-hole on the ſtarboard ſide; ſhould the wind or tide change, ſo as to bring the ſhip to the ſouthward of her anchors, the weſtern anchor will be on the larboard ſide the veſſel, and the eaſtern anchor on the ſtarboard ſide. Theſe two cables (the one from out of the larboard hawſe-hole, and leading toward the eaſtward, or ſtarboard of the ſhip, and that from out of the ſtarboard hawſe-hole leading to the weſtward, or larboard ſide of the ſhip) muſt conſequently croſs each other; that by which ſhe rode, when making the movement of ſwinging, remaining above the other. Suppoſe, in the preſent caſe, the ſhip has ſwung by the anchor to the weſtern ſide, it will then be found in the poſition expreſſed in the plate, fig 1.

If, in a ſecond change of ſituation, the ſhip is obſerved to turn round the ſame anchor, and to the weſtward, the croſs will be taken out, and the cables will reſume their firſt diſpoſition, as repreſented in the plate, fig. 1.

If, on the contrary, the croſs is not taken out, but ſhe ſwings to the eaſtward, the croſs will be doubled, and form an elbow, fig. 2; and ſhould ſhe continue to turn weſtward to the ſouthward, the cables will be again twiſted, and form a round turn, as fig. 3, which ſhould be carefully avoided.

When two cables are croſſed, to take the croſs out, the ſhip muſt ſwing to the upper cable, drawing it tight, and by that means ſlacking the other cable: when the croſs is doubled, and becomes an elbow, the cable, which at firſt was the uppermoſt, being overlaid by the other, and making a turn, it is always on the firſt that the ſhip ſhould make the evolution to take the turn out.

On the poſition to take out the croſs in the cables, and prevent their taking a turn, the ſhip muſt be ſwung, making the circuit as on the plate.

OF CLEARING THE HAWSE.

THIS can only be attempted when the ſhip does not ride by the clearing cable. To execute it, bend a fiſh-hook to the fore-bowline, hook this to the cable the ſhip is riding by, below the turns in the hawſe, and bowſe it well up out of the water: then laſh the cables together at the turns. If the cable, by which the hawſe is cleared, leads on the ſtarboard ſide, ſend the larboard fore-top bowline into the hawſe-hole under the cable, or under and over, according as the cable to be cleared is either below or above the other, which muſt be bent about three fathoms within the hawſe. Then ſend in the ſtarboard bowline, which ſhould be bent well in towards the end of the cable, and ſtopped along the cable at every fathom, and let a hawſe rope be bent to the end of the cable. When all the bowlines are faſt, unbit the cable, and haul out upon the ſtarboard bowline: let the ſtops be cut, as the cable comes out of the hawſe. When a long bight is out, haul upon the larboard bowline, and trice this bight up to the bowſprit. Should this one bight not ſufficiently expend the cable, that its end may be taken round the other, hang it to the bowſprit, and ſend down the larboard bowline for a ſecond bight. When the end of the cable is round the other, ſhift the hawſe rope, and haul it in again. The hawſe being clear, bitt the cable and unlaſh it.

Should it blow freſh, and the tide run to windward, it will be imprudent to truſt only to the laſhings, leſt the cable ſhould run out end for end. In this caſe, bend a hawſer, with a rolling hitch, to the clearing cable, below the turns in the hawſe, and let it be hove tight, as a double ſecurity.

If it is moderate weather and an eaſy tide, the hawſe may be readily cleared, by bowſing the headmoſt cable well up out of the water, and bending to it a hawſer from the hawſe below the turns. Then unbit the cable, veer away upon the hawſer, and paſs the headmoſt cable round the other until its end is clear; then heave in upon the hawſer, take in the cable, and bitt it. Should it come on to blow a gale of wind, when a ſhip is moored, from that quarter which will oblige her to ride equally by each cable, and the hawſe is clear, it will be neceſſary to ſplice a ſecond cable to the ſmall bower, and to veer away equally upon both cables: but, ſhould the hawſe be foul, and it is expected that the cables will damage each other, bend a hawſer below the turns in the hawſe to the ſmall bower, which ſlip, and let the ſhip ſwing to the beſt bower. When the weather moderates, heave in the end of the ſmall bower, and the ſhip will be moored as before with a clear hawſe.

OF GETTING UP OR WEIGHING ANCHOR.

PREVIOUSLY to entering upon directions for UNMOORING and GETTING UNDER SAIL, it is neceſſary to ſhew the various modes of GETTING UP AN ANCHOR, as this operation is often requiſite where it is not deſigned to unmoor; and as it is neceſſary to know how to overcome the difficulties of getting up an anchor in all caſes whatever.

TO GET UP AN ANCHOR, IN SHIPS WHICH HAVE A MAIN AND JEER CAPSTERN.

IN large ſhips which have a main and jeer capſtern, and the ſtrain is thought too great for the meſſenger alone, the viol is uſed thus; three or four turns are taken round the jeer capſtern with one end, ſo as to leave that ſide clear on which the cable is coming in; and paſs the other end through the viol block, which is laſhed round the main maſt on the lower deck. It is then carried forward, and paſſed round the rollers in the manger near the hawſe-holes; then brought aft, and ſpliced to the other end with a ſhort ſplice, and the ends marled down tight. That ſide of the viol on which the cable is coming in is faſtened to the cable by nippers; and thus the continued efforts of the capſtern are conveyed to the cable, until it is hove in. The nippers are clapt on in the manger, from one to two fathoms aſunder; and the viol is applied to the midſhip, or inſide of the cable. Nippers are clapt on by taking three or four turns round the viol; four turns round the cable and viol; and then three or four turns round the cable. This method is an exceeding good one, and very ſuitable to quick heaving; but, when the ſtrain is great, and the cable muddy, the nippers clapt on after this method will not nip ſufficiently; and ſometimes recourſe is had to the following method: Throw ſand or aſhes upon the cable, and take a long dry nipper; which middle, and paſs one half aft, racking

it in and out round the cable and viol; then worm its end round the viol only. After this, paſs the other half in the ſame manner forward, but worm its end round the cable only, and let each end of the nipper be held on. The advantages of this method are, that, as the ſtrain of the cable lies forward, and that of the viol aft, the nipper will be drawn ſo tight as effectually to hold the cable till ſomething gives way: Alſo they can never jamb, for both ends are clear for taking off. Another method, when the ſtrain is great, is, to have nippers with an overhand knot made at one end; and with that end a round turn taken round the cable and viol, leaving three or four feet of the end; then, with the other end, take three or four racking turns, and expend nearly the remainder with turns round the cable and viol, laying the knotted end under and over each of the laſt turns; the end is then held faſt. The men who clap on the nippers are attended by boys, who hold the ends of them; and follow the progreſſion of the cable as it is hove in: and, as the nippers arrive near the main hatchway, they are taken off and carried forward, where they are again clapt on: and ſo in ſucceſſion, until the cable is hove in ſufficiently to raiſe the anchor above the water. It is then ſtoppered round all before the bitts: that is, round the cable and viol. The anchor is then catted, and afterwards fiſhed. To ſhift the viol for heaving in a ſecond anchor, it muſt be unſpliced, and the turns round the capſtern reverſed. When the ſtrain is ſo great as to require other purchaſes, the top tackles may be uſed thus: the double block is laſhed to the main maſt or topſail ſheet bitts, the treble block is laſhed on the cable, and the fall brought to the capſtern. If the top tackle falls are thought inſufficient, any hawſer may be uſed that will reeve through the blocks.

TO GET UP AN ANCHOR IN SHIPS WHICH HAVE NOT A JEER CAPSTERN.

SHIPS without a jeer capſtern have no viol, but heave in their cables by the meſſenger, which has an eye ſpliced in each end; one of which ends is paſſed with three or four turns round the capſtern on the upper deck, and the other end is paſſed forward round the rollers, at the forepart of the manger; then brought aft to the other end, and laſhed thus: ſeveral turns are paſſed through the eyes croſſing each other in the middle, then a half hitch is taken round the parts, and the ends ſtopped with ſpunyarn. The remainder of the operation is performed as by the viol, with this exception, the meſſenger is applied to the outſide of the cable; and, when the nippers are inſufficient, the meſſenger may be hitched thus: the bight of the meſſenger is faſtened round the cable at the manger with a rolling hitch, and the bight ſeized round the cable before the hitch: This practice is by no means ſo good as the others.

When getting under way in a ſea gale, a viol is better than a meſſenger, as the ſending of the ſhip carries all the ſtrain to the main capſtern, and endangers the men at the bars; whereas, with a viol, the ſtrain is taken to the viol block, and the men at the fore jeer capſtern heave in ſecurity.

TO GET UP A SECOND ANCHOR.

SUPPOSE, by the former methods, that the ſtarboard anchor is gotten up, and that the cable of the ſecond anchor enters the larboard hawſe-hole, the operation of getting up the ſecond anchor

is the ſame, obſerving only, that the meſſenger muſt be ſhifted, and the turns on the capſtern reverſed, to change the diſpoſition and ſide: and the men, who before held on the larboard ſide in the firſt operation, will hold on the ſtarboard ſide now: the motion of the capſtern is performed the contrary way, and the cable on the larboard ſide is fixed and hove in.

TO GET UP AN ANCHOR IN MERCHANT-SHIPS.

Moſt merchant-ſhips and ſmall veſſels heave up their anchors by a windlaſs; round which are taken three turns of the cable, and held on by hand, or by a jigger, thus: The end of the rope which has the ſheave is paſſed round the cable, with a round turn, cloſe to the windlaſs, the leading part of the rope coming over the ſheave, and ſtretched aft, by means of the fall paſſing through the jigger block; the ſtanding part of the fall is made faſt round a ſtantion, at the fore part of the quarter deck, and the leading part is bowſed upon, which jambs the turns taken round the cable; and, when the jigger arrives abreaſt of the hatchway, it conſtantly removes forward, and the cable is jambed by a handſpeck at the windlaſs, until the jigger is refixed.

TO WEIGH AN ANCHOR WITH THE LONG BOAT.

THIS is done, by taking the long boat to the buoy of the anchor, and putting the buoy rope over the davit of the long boat, and a tackle on the buoy rope; by which, with the aſſiſtance of men on the fall, the anchor is weighed out of the ground. This being accompliſhed, the cable is hove in on-board; the buoy rope and tackle being ſecured in the boat, they approach the ſhip as the cable is hove in, and the anchor catted and ſtowed. Small anchors and grapnels are got up by the davit, hauling upon the cable or grapnel rope by hand.

TO WEIGH AN ANCHOR BY UNDER-RUNNING.

THIS is by placing the cable over the davit-head, and under-running it, till it is nearly a-peek, when it is tripped by means of tackles as before by the buoy rope. This method is troubleſome, and is only adopted when the buoy is gone, and a ſhip cannot get near her anchor for want of water.

OF CUTTING OR SLIPPING THE CABLE TO MAKE SAIL.

THIS is a quick but very expenſive method, and practiſed but in caſes of the greateſt neceſſity; ſuch as when the anchor is hooked to rocks, and cannot be purchaſed; in bad weather; when at anchor on a lee ſhore and in danger of being embayed; or when compelled to fly from or purſue an enemy. The cable is cut by an axe at the hawſe-holes or at the bits. Slipping the cable, if time

will permit, (which prevents loſing the anchor and cable, and is more prudent than cutting,) is by letting the cable run out end for end. Obſerving however before it is either cut or ſlipped to paſs a ſpare buoy rope in the hawſe-hole, and faſten it near the end with a rolling hitch, worm the end in the euntline and ſtop it, that it may be eaſily regained.

TO SWEEP AN ANCHOR.

TO ſweep an anchor, is ſeeking at the bottom for one loſt, by means of a rope called a ſweep. This rope has its two ends made faſt to two boats abreaſt of each other, at a ſmall diſtance aſunder. On the bight of the ſweep is fixed a weight of ſhot, ballaſt, &c. to keep it at the bottom. The two boats row on toward the place where the anchor is ſuppoſed to be, and conſequently draw along the ſweep; which, taking the bottom, hooks or entangles itſelf with the object of their ſearch. The boats then row acroſs each other twice, ſo as to take a round turn with the ſweep, which being a hawſer, both parts are brought into the hawſe-hole, and to the capſtern; (or if ſmall to the long boat;) and hove in upon as before.

TO UNMOOR.

SHOULD the ſhip to be unmoored have her beſt bower to the ebb, let her be unmoored upon the ebb tide: but, if there were a neceſſity to unmoor upon the flood, the ſtream cable muſt be ſpliced to the ſmall bower, ſuppoſing the ſmall bower has but one cable. To unmoor upon the ebb, when it has made ſtrong, veer away the beſt bower, bring to and heave in the ſmall bower, and keep veering away the beſt, till the ſmall bower is up-and-down; then ſtopper the beſt bower.

The ſmall bower being up, cat the anchor, ſhift the meſſenger, bring-to the beſt bower, and heave in to the whole or half-cable ſervice, as may be thought neceſſary, then bit the cable, and fiſh the ſmall bower anchor.

Should a ſhip be under the neceſſity of unmooring upon a windward tide with a ſtrong wind, it will be very difficult and dangerous to take up the ſternmoſt anchor. In this caſe, if there be no ſhips in the way, the headmoſt anchor may be the firſt taken up with ſafety, and the ſternmoſt cable be hove in towards ſlack water.

OF GETTING UNDER SAIL.

SOME general obſervations relative to getting under ſail are very neceſſary to be attended to.

Whenever a ſhip is preparing to get under ſail, the topſail yards ought to be at the maſt-head, and her ſails ſtopped with rope yarns. And indeed all perſons that pique themſelves on rapid execution ought to obſerve this precaution when the wind is not too powerful.

When the tide takes a ſhip on the beam, and ſhe is to caſt the other way, it is evident that the tiller in the firſt inſtant muſt be put on the ſide the current runs from, becauſe the rudder will be in ſuch a ſituation as to receive very obliquely the impulſe of the fluid, and conſequently will but little oppoſe the ſhip's falling off, provided the ſhip's velocity does not exceed that of the current.

When in a ſituation where it is indifferent whether the ſhip be caſt one way or the other, always let it be to leeward of the anchor, that there may be no riſk of its getting foul of the cutwater.

It happens ſometimes, in getting under ſail, that you are obliged to heave the anchor up to leeward; which often requires a dangerous ſtrain to the capſtern; becauſe the ſhip, driving to leeward as ſoon as the anchor is a-weigh, cauſes the cable to girt againſt the lee bow, and the ſtock of the anchor is very apt to catch the cutwater. To avoid this, let the ſhip, (if you are near the land) get offing enough to wear and bring the anchor on the weather bow: then the ſhip, lying to leeward of the anchor, or ſtanding-on under an eaſy ſail, drifts, and conſequently leaves the anchor diſengaged to windward; in which ſituation it may be hove with facility.

TO GET UNDER SAIL WHEN THE SHIP IS SWINGING HEAD TO WIND, AND YOU WANT TO CAST EITHER TO STARBOARD OR LARBOARD, IN A PLACE WHERE THERE IS NO CURRENT.

TO CAST TO STARBOARD.

HEAVE ſhort on your anchor till it is a-peek: then haul in quite home the larboard braces forward, and ſtarboard braces abaft: looſen, ſheet-home, and hoiſt the topſails, ſhould they not be ſo already: put the helm a-ſtarboard, and heave till the anchor is a-weigh. The moment the anchor quits the ground, the ſhip will begin to fall off to ſtarboard. As ſoon as this movement is perceived hoiſt the jib and fore-topmaſt ſtay-ſail, if neceſſary, to help her: and, when ſhe has ſufficiently fallen off, her ſails abaft (which are trimmed ſharp for the larboard tack) will fill. But, unleſs for very ſuperior reaſons, you had better continue lying-to till the anchor is catted, taking care to haul the mizen-ſheets cloſe aft, if the ſhip be inclined to fall off too much.

TO CAST TO LARBOARD.

HAUL in the ſtarboard braces forward, and the larboard aft, and put the helm a-port. The reſt of the operation is the ſame as the preceding; and will be equally proved in the following demonſtration, by only changing ſtarboard for port.

DEMONSTRATION.

YOU heave ſhort before the top-ſails are looſened, in order to facilitate the working of the cap-ſtern, which would require dangerous efforts, if they were ſet; ſince they would be a-back, and conſequently in a ſituation to ſend the ſhip a-ſtern; whereas ſhe ſhould go a-head when you are heaving on your cable. The larboard braces are hauled in forwards, becauſe in that ſituation, the ſails are ſo braced as to caſt the ſhip's head to ſtarboard, ſince they make with the keel the moſt acute angle poſſible a-ſtarboard forward, and are at the ſame time a-back. Beſides, the after-ſails being braced ſharp up to ſtarboard, are alſo taken a-back like the others, and receive the wind in ſuch a manner as to turn the after-part to port. So that there are always two powers acting in contrary directions, one before and the other abaft the center of gravity of the ſhip; the one forcing the fore-part to ſtarboard, and the other impelling the after-part to larboard. As theſe two effects cannot happen without the ſhip's going a-ſtern the moment the anchor quits the ground, ſince ſhe is no longer with-held by any thing, and is moved by an exterior power, the fluid, which carries her in this direction, part of the effect of her ſails giving her ſtern-way (§ 21.); it follows, that the helm muſt be put to ſtarboard, that the rudder may help her after-part round to larboard (§ 58). Thus every thing is diſpoſed to make the ſhip fall off to ſtarboard. The jib and fore-topmaſt ſtay-ſail are not added, unleſs there be reaſons to fear the ſhip will not fall off faſt enough; and when you find ſhe has ſufficiently done ſo, the mizen is to be hauled out, to procure the contrary effect, and thereby to counterbalance the jib and ſtay ſail, which it is very often neceſſary to keep ſet.

TO GET UNDER SAIL, WHEN THE SHIP IS RIDING HEAD TO WIND AND TIDE.

IF a ſhip, riding head to wind and tide, wanted to get under ſail; after having decided on which ſide it is beſt to have her caſt, it muſt be performed according to one of the foregoing methods, except with regard to the helm, which muſt be put to ſtarboard, either before the anchor looſens, or while it does, if you wiſh to caſt to port; becauſe the water, coming from forward, acts with the ſame force on the rudder as if the ſhip went with the current, impelling the rudder to ſtarboard, and the head to port. Therefore it is evident, in this caſe, the helm ought to be put to ſtarboard; which, on the contrary, would be put to larboard, was the ſhip to be caſt to port.

If the ſhip, after the anchor is out of the ground, goes a-ſtern faſter than the current runs, the helm muſt then be uſed as if there was no current, becauſe the exceſs of velocity, whereby the ſhip exceeds that of the water, acts upon the rudder.

If it blows freſh, ſo that you cannot ſet your topſails without reefing them, let that be done before they are ſheeted home; and if it blew ſo hard as to be obliged to go only under a fore-ſail, it

would be then ſufficient to looſen the fore-topſail, without ſheeting it home, after having braced it quite cloſe on the ſide oppoſite to that you want the ſhip to caſt, not forgetting however to put the helm the ſame way as you caſt, as ſoon as you perceive the ſhip going a-ſtern; and when the ſhip has fallen off ſufficiently, then is the time to fill and trim the fore-ſail.

TO GET UNDER SAIL WHEN THE SHIP IS SWINGING WITH HER HEAD TO THE CURRENT, AND WITH THE WIND A-POINT ABAFT THE BEAM.

THE topſails being ſtopped with rope-yarns, let them and the mizen topſail be hoiſted, and properly trimmed, as if they were ſet; and, when every thing is properly diſpoſed, heave ſhort on your anchor till it is a-peek; next to this, looſen, ſheet home the fore-ſail and mizen topſail, keeping the wind in, and heave vigorouſly at the capſtern till the anchor is a-weigh. At the ſame time hoiſt the jib and fore-topmaſt ſtay-ſail, or haul out the mizen, according as circumſtances may require. Whether you wiſh to come to windward, or fall off more quickly, you muſt ſtill continue to heave round the capſtern briſkly to get the anchor up, till you find yourſelf ſufficiently offward to bring to, in order to ſtow it with eaſe, or to ſtand on under an eaſy ſail with the anchor hanging out to windward, if the ſituation of things will admit of it. You may ſometimes alſo hoiſt up both the main and fore topſails, as ſoon as you get ready; but, in certain caſes, as when obliged to make the beſt of your way from an enemy, every ſail poſſible muſt be ſet at once which the weather will admit of; eſpecially when obliged to haul by the wind; in which caſe, the anchor muſt be got up and catted as well as it can: there are caſes even when, without loſing your time in weighing it, you crowd as many ſails as you poſſibly can, and depart in cutting or ſlipping the cable.

DEMONSTRATION.

THE topſails and mizen topſail are hoiſted up, becauſe the ſails in that ſituation are more eaſily ſheeted home and trimmed; and becauſe, as ſoon as the rope-yarns are cut, the ſails fill, and give the ſhip head way, the moment the anchor quits the ground. The mizen topſail is uſed to make the ſhip ſteer well, by keeping it either filled or looſe to the wind, according as the ſhip is griping or the contrary.

TO GET UNDER SAIL WITH A SPRING.

IF a ſhip be in a place too confined to caſt under her ſails only, or being obliged to put to ſea in a gale of wind, without hoiſting the anchors; you muſt, for greater ſafety, in caſting the right way, get a ſpring out, to be clapped on the cable by which the ſhip ſwings, by paſſing a hawſer or a ſtream cable through the aftermoſt port, on the oppoſite ſide to that you mean to caſt; and, after that ſpring is well hove tight at the capſtern, hoiſt the jib and fore-topmaſt ſtay-ſails, looſe, and ſheet home the fore-topſail; when that is done, and if the weather permits, brace quite cloſe the head ſails on the ſame ſide with the ſpring. When this is executed, ſlip or cut the cable, heaving briſkly at the ſame time on the ſpring, till the ſhip has paid off ſufficiently. Then fill the ſails, by ſetting the mizen top-

ſail and every other ſail you mean to employ, and ſlip or cut the ſpring, as circumſtances may require. Care muſt be taken, not to let the ſhip fall off too much before the ſpring is cut; becauſe, having no way through the water, ſhe will not come to the wind ſo ſoon as might be wiſhed; and, for the ſame reaſon, the ſpring muſt not be cut, till ſhe has fallen off as much as is neceſſary; becauſe, although ſhe has no other motion but that of falling off, the veſſel might perhaps not wear enough to anſwer the purpoſe.

DEMONSTRATION.

AS the reaſons have been ſhewn before why the head ſails are braced up on the oppoſite ſide to that on which the ſhip caſts, they need not be repeated here. Although we ſuppoſe the wind ſo ſtrong as to keep the ſhip wind-road, it may be proved that the ſhip turns almoſt on the middle of her length; ſince the moment the fore part begins its movement of falling off on one ſide, the after part makes another to approach the point from which the head is receding. Now ſhe turns ſo much the more ſurely on her center, and her evolution is ſo much the more rapid, as the force uſed in heaving at the capſtern is ſtronger: becauſe the more powerful the heaving is, the more of the hawſer comes in, and conſequently the more eaſily and with the greateſt rapidity will the after part approach the point the head of the ſhip has left.

When ſhe has fallen off enough, ſlip the ſpring, becauſe ſhe gathers head-way in proportion as the ſails are filling, and in that caſe the hawſer would only hinder the ſhip going a-head, or cauſe her to fall off more, which would be equally prejudicial. The hawſer or ſtream cable is paſſed aft as far as poſſible; becauſe, being at the extremity of the ſhip, the capſtern ſtrains leſs, and the veſſel turns with more celerity.

If this operation is performed when it blows hard, you muſt not ſheet home the fore-topſail: for, if the wind is abſolutely too ſtrong, you muſt only looſen this ſail, and hoiſt the fore-topmaſt ſtayſail: but, if the weather is pretty tolerable, it will be found ſufficient to ſheet home the fore-topſail without hoiſting it.

TO GET UNDER SAIL WITH A LEADING WIND IN A TIDE WAY.

IF the ſhip to be got under ſail has a leading wind, and is in the midſt of veſſels, or in a narrow channel, where it would be difficult to caſt her upon the lee tide, ſhe ſhould be got under ſail before the weather tide is done. Thus the caſting of the ſhip would be avoided, and ſhe may be ſteered through the fleet, or channel, with ſafety.

Should it, however, blow ſo freſh upon the windward tide, as to force the ſhip end-on with her cable, it will be impoſſible to heave it in, without ſheering the ſhip over from ſide to ſide, and heaving in briſkly, as the ſhip ſlacks the cable; but, as this is attended with much danger, by the ſhip ſuddenly bringing up upon each ſheer, it will be beſt to heave a-peek upon the firſt ſetting of the windward tide, before the ſhip ſwings, to bring the wind aft.

TO CAST A SHIP UPON THE LARBOARD TACK, AND BACK HER A-STERN OF DANGER.

WE ſuppoſe the ſhip to lie at ſingle anchor, with the wind and tide the ſame way, and ſhips or ſhoals right a-ſtern, in the intended courſe, and that, to clear them, you muſt caſt upon the larboard tack, and make a ſtern board.

Make every thing as ready as poſſible before weighing: let the three topſails be hoiſted, the yards braced up ſharp with the larboard braces, and the mizen hauled out. Thus ſituated, when the anchor weighs, put the helm a-port. The tide, running aft, acts againſt the ſtarboard ſide of the rudder; and, in that direction, it will caſt the ſhip the right way, and bring the wind upon the larboard bow. The wind may be thus kept, at pleaſure, by the helm, till the ſhip begins to get ſternway through the water, which ſhould be attentively noticed, to put the helm hard a-port. The wind, being on the larboard bow and the topſails a-back, will ſoon give the ſhip ſternway through the water; then the water will act againſt the larboard ſide of the rudder, and powerfully prevent the ſhip falling too faſt off from the wind. Thus ſhe will drive till the anchor is got quite up, and may be ſo continued till ſhe has paſt the ſhoals, and has room to veer, and get upon her proper courſe.

It is advantageous to make a ſtern board in getting under way from a ſingle anchor in the above ſituation. The anchor heaves up more eaſily when the ſhip goes a-ſtern; and, while heaving up, it ſerves to keep the ſhip's head to the wind. A ſhip, however, cannot long be ſteered ſtern foremoſt when under ſail, ſo as to keep the wind before the beam; but ſhe will in a little time drive broadſide through the water, till ſhe gets headway, and then it is proper to veer, provided the anchor be quite up.

TO CAST A SHIP ON THE LARBOARD TACK, IN A TIDE WAY, WITH THE WIND TWO POINTS ON THE STARBOARD BOW.

A ſhip riding in a tide-way, with the wind two points on the ſtarboard bow, and ſo near the ſhore on the larboard ſide, that ſhe muſt be caſt upon the larboard tack, to clear the ſhore, the *three* topſails, muſt be hoiſted, and the yards ſharp braced up, with the larboard braces forward, and the ſtarboard braces aft, with the ſtarboard fore top bowline well hauled, putting the helm hard to port, at the anchor's weighing; the tide acting upon the rudder, and the wind upon the ſails *braced in that direction*, brings the ſhip about, with the wind on the larboard bow, before ſhe gets ſternway, which ſhould be always ſtrictly noticed; for, in all proceedings of this kind, if a ſhip gets ſternway, before ſhe brings the wind right a-head, ſhe will not come about the right way. In that caſe, it is beſt to veer away the cable directly, and bring the ſhip up again: and carry out a kedge or ſmall anchor, on the larboard bow, hauling its *cable* or hawſer in tight, on the larboard quarter, when the bower anchor's a-peek. If this fail, the ſhip muſt lie till the windward tide makes, to bring the wind on the larboard bow, when the ſhip may be got under-way, and clear the ſhore.

TO CAST A SHIP UPON THE LARBOARD TACK, AND SHOOT HER BY THE WIND A-HEAD OF DANGER.

IF there is but juſt room enough cloſe by the wind to clear a danger lying to leeward, much depends on heaving up briſkly the anchor after it is out of the ground, and having proper ſails ready to ſet to the beſt advantage. The three topſails muſt be hoiſted, and the yards ſharp braced up with the larboard braces forward, and the ſtarboard braces aft, when the anchor is at a long peek. At weighing the anchor, put the helm hard to port, then the action of the tide upon the rudder, and the wind on the fore-topſail will caſt the ſhip off the right way, ſo as to fill the after ſails, when the fore-topſail may be ſoon braced about and filled before ſhe gets ſternway. The helm will keep the ſhip under command ſufficiently to ſteer her by the wind a-head clear of danger; but, if the ſhip gets ſternway in caſting, the helm ſhould be kept hard a-weather to prevent her falling off too much from the wind; and, when ſhe gets headway again, be cautious how the weather helm is eaſed with the anchor much below the bows, by which the reſiſtance forward is increaſed, and the ſhip may be brought up in the wind, ſo as to prevent her ſhooting clear of the danger. This muſt be guarded againſt by the weather helm, and head ſails, as jib, fore-topmaſt ſtayſail, &c. As ſoon as the ſhip has ſhot far enough a-head to clear the danger to leeward, and there be but little room a-head, it is beſt to bring the ſhip to and drive with the helm a-lee with the main and mizen topſail aback, and the fore-topſail ſhivering till the anchor is up, then take proper time to veer.

TO CAST A SHIP ON THE LARBOARD TACK, WHEN RIDING WITH THE WIND RIGHT A-HEAD, AND TO VEER HER SHORT ROUND BEFORE THE WIND IN LITTLE ROOM.

THE head ſails ſhould only be looſe, viz. the fore-topſail hoiſted and the foreſail looſe, braced ſharp up with the larboard braces, the jib and fore-topmaſt ſtayſail ſet, with the larboard ſheets flat aft. When the anchor is a-peek, and a lee tide running, at weighing the anchor the helm ſhould be put to port ſo far as to bring the wind two points on the larboard bow, which ſhould be kept ſo by ſteering the ſhip till the tide ceaſes to run aft. Then put the helm hard to ſtarboard, or a-lee; and when the ſhip gets ſternway, the water will act powerfully on the ſtarboard, or lee ſide of the rudder, turning the ſhip's ſtern to windward, whilſt the wind, acting at the ſame time upon the head ſails a-back, will box her round off upon her heel, ſo as to bring the wind nearly aft, by the time ſhe loſes her ſternway. Then the ſhip will ceaſe falling off and ſoon get head-way, which ſhould be attended to, and the head ſails braced about flat with the ſtarboard braces, and the helm ſhifted hard to port at the ſame time.

When there is no tide, but ſtill water at weighing the anchor, the helm muſt be hard to ſtarboard; and, as the ſhip gets ſternway, the water meets with ſo much reſiſtance againſt the ſtarboard ſide of the rudder in that direction, that the rudder acts with great power to turn the ſhip's ſtern round to port, and the head ſails being ſet and trimmed as before mentioned, and the foreſail let fall with the ſtarboard bowline hauled cloſe forward, will aſſiſt to caſt the ſhip ſo far round the right way, by the time ſhe loſes her ſternway, as then to permit your proceeding as before directed. To enſure ſucceſs, heave the anchor up briſkly. The ſame methods are adopted in caſting the ſhip on the ſtarboard tack, only the helm and ſails are managed the contrary way.

ON TACKING.

TO TACK A SHIP IN GETTING TO WINDWARD AS MUCH AS POSSIBLE.

TO execute this with propriety, care muſt be taken that the ſhip does not yaw, that ſhe is not too near or too far from the wind; becauſe both ſituations are equally prejudicial.

When this medium is obtained, haul the mizen out, while you put at the ſame time the helm a-lee, and brace the bowline quite to leeward, that the mizen may be as much as poſſible expoſed to the wind. When the ſhip is come to the wind, ſo as to cauſe the ſquare ſails to ſhiver, let go the jib and all the ſtayſail ſheets before the main maſt: at the moment when all the ſails catch a-back, and particularly the mizen topſail, let it be braced ſharp about the other way; hauling up at the ſame time the weather clue of the main ſail; and, when the wind is right a-head, or even a little before, haul the main ſail, and trim ſharp for the other tack as faſt as poſſible. The jib and ſtayſail ſheets are alſo to be ſhifted over at the ſame time, in righting the helm, whether the ſhip has loſt her way, or even ſtill advances a-head. Then, as ſoon as ſhe has paſſed the direction of the wind about 45°, in continuing her evolution, ſhift the foremaſt's ſails, which are to be trimmed with the ſame celerity as in putting the helm a-lee, if you fear the ſhip (which muſt ſtill go a-ſtern if the operation be ſlowly executed) will not fall off ſufficiently: for, if the ſails are braced about briſkly, ſhe will never have ſternway; on the contrary, ſhe will get a great deal to windward.

DEMONSTRATION.

IF the ſhip be too near the wind, when the helm is put a-lee, ſhe will moſt probably miſs ſtays; ſince not having ſufficient way through the water, the rudder will not have a ſufficient power to cauſe the ſhip to double the critical point where all the ſails ſhiver. The power of the rudder to turn the ſhip, is in proportion to the force with which the water ſtrikes it (§ 58). Hence it follows, that if the ſhip has not ſufficient velocity, the rudder will not have force enough to cauſe her to double the point, where all that can augment or keep up the rapidity of ſailing (and of conſequence the power of the helm) will ceaſe, the ſails being all ſhivering. The ſhip muſt then neceſſarily fall off, ſince the helm is a-lee, and none of her ſails tend to ſhoot her a-head. On the contrary, her mizen being out, and braced quite to leeward, forces the ſtern and the ſhip athwart (§ 40.); while, by the wind which ſtrikes her ſails, rigging, and hull, ſhe is but too ready to drive a-ſtern, as a ſhip always finds great difficulty to divide the fluid laterally. Thus it is clear, that, every thing being diſpoſed for driving the ſhip the ſternway, ſhe muſt infallibly both go a-ſtern and leeward (§ 58). This is confirmed by experience; for, whenever a ſhip miſſes ſtays, ſhe is viſibly perceived to fall abaft.

If, previous to tacking a ſhip is kept too much a-way, ſhe will be longer in ranging to the wind; which muſt conſequently be diſadvantageous to the evolution. We ſhould not have mentioned this cuſtom, did not many ſeamen, through mere habit, put it in practice, and thereby fail in this operation, which would however have ſucceeded, had they not had the habit of letting go the fore-jib, and ſtayſail ſheets. When theſe have been kept faſt, the edging a-way can only prolong the time of the evolution; but, if the fore, jib, and ſtayſail ſheets be let go, as a great many do at every turn, and as in ſome particular caſes it is really found neceſſary, care muſt be taken not to ſuffer the ſhip to fall off too much: becauſe the velocity of the ſhip not being ſufficiently kept up (§ 46.) till the ſhip comes to the wind, it follows that ſhe has loſt a good deal of it, before ſhe arrives at the critical part of the evolution, where all the ſails ſhake. So that, when the ſhip is at that point, the velocity is ſo much diminiſhed, the rudder has not power enough to make her double it: on the other hand, the fore part of the ſhip is no longer carried to the wind with the ſame force, ſince the veſſel no longer ſhocks the fluid (§ 47.) with her firſt velocity.

The mizen is hauled out to help the rudder; becauſe theſe two forces act together in impelling the after part of the ſhip to leeward (§ 40. & § 50). When the helm is a-lee, the ſhip of courſe comes head to wind; and continues that circular motion, firſt by the effect of the rudder, till the head way ceaſes, and then by that of the mizen, till the other ſails take the wind from it. Therefore, when the mizen is becalmed by the other ſails, the evolution is ſure, as this could not happen if thoſe ſails were not taken a-back.

You muſt wait till the ſquare ſails begin to ſhiver, before letting go the jib and all the ſtayſail ſheets before the main maſt; becauſe, till that moment, theſe ſails concur to maintain an equilibrium with the others, and keep up the ſhip's velocity; ſince it is the diſpoſition of the different ſails ſet on the different parts of the ſhip, which gives her more or leſs way through the water (§ 46). Theſe however being now the only ſails which tend to make the ſhip fall off (§ 31.), ſince they are the only ſails full, the others being ſhivering, it is abſolutely neceſſary at this moment to ſuppreſs that effect, ſince it is contrary to the movement of coming to; the action of the mizen is, however, to be preſerved as long as poſſible, in order to help the rudder, which, in keeping up the movement of rotation of the ſhip, will ſoon make her clear the critical point of the evolution.

Experience teaches that the motion of the ſhip, in coming to the wind, at the moment the jib and ſtayſail ſheets are let go, is very rapid, provided the other ſails ſhiver; becauſe the velocity of the ſhip, at that moment, is as great as when all the ſails were expoſed to the impulſion of the wind. Conſequently, the effort of the rudder is likewiſe very powerful (§ 50.), ſince the rapidity of ſailing has not diminiſhed.

The mizen ſail is to be braced up ſo far as to join the main ſhrouds to windward; becauſe in that ſituation it is expoſed as much as it poſſibly can to the wind, and receives conſequently a ſtronger and longer impulſion; and, again, becauſe it is trimmed as it will remain even after the evolution has been performed.

The mizen topſail ſhould be braced about as ſoon as it is taken a-back, becauſe it will then impel the ſtern to leeward, jointly with the mizen (§ 44.), and, by this new diſpoſition, accelerate the evolution: whereas, if it were continued in its firſt ſituation, it would retard the circular motion of the ſhip, by impelling the after part to windward (§ 45). It will alſo, in this ſituation become very uſeful, in moderating the ſtern and lee way of the ſhip.

At this ſame time, the weather clue and ſheets of the main ſail are hauled up, in order that all may be ready to brace round for the other tack.

The main ſails are to be hauled about and filled when the wind is right a-head; becauſe 1ſt, at this time the ſails on that maſt are becalmed by thoſe of the fore maſt: 2dly, ſhould they be left longer in this ſituation, they would counteract the head ſails (§ 37, § 38, § 44, & § 45.) which are braced up for the ſame tack, and in the ſame manner; and, finally, becauſe, were it not for this, the ſine of incidence of the wind on them would be continually increaſing as the ſhip were falling off, which would more and more retard her bearing away.

It is, notwithſtanding, not untrue, that the evolution would be more rapid, if the ſails on the main maſt were filled as ſoon as they are taken a-back: becauſe (§ 44.) they would impel the after part of the ſhip to leeward. But, this effect of the after ſails ought not to be attended to, except when the ſhip has loſt her velocity, and the rudder its power. Whence it muſt be concluded, that the ſhip will always fall off with great celerity, as ſoon as the main ſail is hauled.

The jib and ſtayſail ſheets are alſo ſhifted at this time, if they have not been lowered before; becauſe, if ſooner, they would take the wind in again, which muſt not be done before the ſhip has fallen off ſufficiently to clear the direction of the wind.

The helm is to be righted if the ſhip has loſt her way; becauſe, if it were continued a-lee, as in the firſt inſtant, and the ſhip ſhould get ſternway, the rudder (§ 58.) would oppoſe the evolution, which muſt now be finiſhed with ſufficient rapidity by the ſole effect of the head ſails, as theſe are now fully expoſed to the power of the wind. Great care muſt be taken not to ſlack the bow lines, as is often done by people who act more from cuſtom than reflection.

The head ſails are to be braced about and filled, when the ſhip has got over the direction of the wind by 45°, or thereabouts; becauſe, if they were left longer a-back, the motion of falling off the ſhip would become too rapid, and too great. If they are braced about briſkly at the time before mentioned, they may be made to ſhiver, which, by diminiſhing their effect, will moderate the great velocity of falling off which the ſhip has acquired (§ 37).

The helm ought to be put a-lee (§ 58.) if the ſhip goes a-ſtern, to aid her falling off, which is now carried on only by the jib and ſtay ſails before the center of gravity. Thus the ſhip falls off moderately, in yielding to the wind by 12° or 20° only, more large than if cloſe hauled; becauſe the after ſails, being trimmed ſharp, ſoon bring the ſhip to the wind, and give her head way (§ 41). Let it not be forgotten, that the helm ought not to be put a-lee in hauling off all, unleſs you judge the ſhip not ſufficiently inclined to fall off, which however ſeldom happens when ſhe is come to this point.

THE DEMONSTRATION OF THIS EVOLUTION COMPREHENDS THE WHOLE PLAY OF THE SAILS AND OF THE RUDDER; SO THAT ALL OTHER DEMONSTRATIONS MIGHT BE CONSIDERED AS SO MANY COROLLARIES DEDUCED FROM IT.

TO TACK A SHIP, WITHOUT ENDEAVOURING TO GET TO WINDWARD.

THERE are circumſtances ſometimes when it is found neceſſary to tack, without caring much whether the ſhip looſes to windward. For, example; when a ſhip is found ſuddenly to be cloſe to the land; in the night, or in foggy weather; near a danger, or ſome veſſel, which muſt inſtantly be avoided by ſtaying the ſhip, becauſe you find yourſelf to windward, and too near the object from which you wiſh to recede. In this caſe, when it is neceſſary to deaden the ſhip's way, and tack at the ſame time, you muſt ſuddenly put the helm hard a-lee; and, in the ſame inſtant, let go the jib,

fore, and ſtay ſail ſheets, without touching the bow-lines; and great care muſt be taken that the effect of the mizen is preſerved as much as poſſible. When the ſails begin to ſhiver, the mizen is to be hauled quite in the lee braces: then, if the ſhip takes well the wind a-head, the remainder of the operation muſt be executed as directed in the preceding caſe: but, if you ſhould miſs ſtays, you muſt proceed according to the ſecond method of veering, called BOXHAULING.

DEMONSTRATION.

It is eaſily conceived that, in letting go the fore, the jib, and ſtayſail ſheets, the ſhip's head way will be diminiſhed (§ 46), while, at the ſame time, almoſt all the forces forward are taken away which might hinder her coming to the wind (§ 31): therefore the ſhip muſt come to it rapidly, by the effect of her after ſails (§ 41.) which are trimmed ſharp, and by the power of the helm (§ 50), till all the ſails ſhake. It is alſo eaſy to conceive that when the mizen is hauled in the lee braces, it has a greater power to impel the after part of the ſhip to leeward, and the ſails conſequently to take a-back. So that the ſhip's head way will the ſooner be ſtopped; and, the fore ſheet being gone, the ſail to windward makes a large cavity between the maſt and ſhrouds; which very much contributes to ſend the ſhip a-ſtern. Attention ought therefore to be paid to catch the inſtant, when the head way ceaſes, to ſhift the helm and aid the ſhip in her evolution; as we hinted already. The reaſon this method is not always practiſed, is becauſe the ſhip would loſe a deal of ground in driving to leeward, in wearing thus. It ought, therefore, never to be uſed but when neceſſity obliges, and the veſſel has good way through the water; for, if ſhe has not, ſhe will generally miſs ſtays.

TO TACK A SHIP IN A DANGEROUS ROUGH SEA WHEN HER STAYING IS DOUBTFUL.

LET every thing be got clear and ready; the hands at their proper ſtations; the ſails trimmed fair; and the ſhip ſteered juſt full, and cloſe by the wind. Take the advantage of the ſmootheſt time when the ſhip has the moſt head way. The other neceſſary precautions are, to haul down the jib, if ſet, and not to put the helm a-lee all at once, but to luff the ſhip up by degrees, to ſhake the ſails. When they ſhake, give theſe orders—The helm hard a-lee; let go the lee ſheets forward, but not the lee braces and foretop bowline, as that uſual practice backs the head ſails too ſoon, and ſtops the ſhip's head way, which ought to continue to give power to the helm, till the wind is brought a-head, or the ſhip will not ſtay. Raiſe tacks and ſheets, and main ſail haul, when the wind is a-point on the weather bow: this ſwings the yards round ſharp, that the main tack may be got cloſe down, whilſt the head ſails becalm the fore leech of the main and main topſails; while the wind, blowing aſlant on the after leech of theſe ſails, acts jointly with the rudder to turn the ſhip's ſtern, ſo as to bring her about the right way. When ſhe has fallen off five or ſix points, let go and haul.

When a ſhip comes about, ſhe is ſure to have ſternway by the time the head ſails are hauled: therefore, the helm ſhould not then be ſhifted a-lee, but ſhould be kept hard a-weather, till her ſternway ceaſes. The water acting upon the weather ſide of the rudder prevents the ſhip falling round off from the wind, which the helm, when hard a-lee, occaſions, while the ſtern way continues. Notice ſhould be made by the compaſs, that the ſhip continues coming about till the wind is on the

other bow; for, if ſhe ſtops with the wind a-head, and her headway is perceived to be done, the helm ſhould be directly ſhifted to the other ſide, ſo that, by the ſternway, the water may act upon the rudder and bring her about, and then the helm ſhould not be kept a-lee, but directly ſhifted and kept hard a-weather, till her ſternway ceaſes. For the reaſon juſt given the head ſails may be hauled as ſoon as poſſible; for the ſhip will be ſure to fall off the faſter and farther in proportion to her ſternway; ſo that the weather braces ſhould be tended, to prevent the head yards flying fore and aft, as they will do when it blows freſh; and to keep the head ſails ſhivering, that the fore tack may be got cloſe down eaſily, and the ſhip ſtopt the ſooner from falling off. Shift the helm a-lee when the ſternway ceaſes; and the head ſails may be trimmed ſharp as the ſhip is perceived to come-to.

ON TURNING TO WINDWARD IN VERY NARROW CHANNELS.

AT weighing, if the wind is partly acroſs the tide, it will caſt the ſhip with her head towards the weather ſhore, which ſhe may be kept clear off, by driving with the ſails a-back till the anchor is up and ſtowed; and, as the tack towards the weather ſhore, is the ſhorteſt, it is prudent to back, as near the lee ſide as poſſible, in order to make the firſt board the longer; to get the three topſails, jib, ſtayſail, and mizen, properly ſet; and to get all ready in time for tacking. Make as bold as poſſible with the weather ſhore, becauſe on that ſide a ſhip is always ſureſt in coming about; and, in caſe of miſſing ſtays, a ſhip may be backed off from the weather ſhore, till ſhe has room to fill and ſet the ſails, and get ſufficient headway, to try her in ſtays again, without danger. But, when the ſhip is got about, and ſtanding towards the lee ſhore, it may be neceſſary to put her in ſtays in good time; becauſe ſhe does not ſo certainly ſtay, when going ſlanting with the tide as when going acroſs it.

By ſtaying her thus in good time, if ſhe even miſs ſtays, there may be room enough to fill, and try her the ſecond time, or to uſe ſuch means as may prevent her going on ſhore.

But, when the wind is right againſt the tide, which begins to make to windward, be cautious not to weigh the anchor, till the ſhip ſwings end-on to the tide, and brings the wind ſo far aft, that ſhe may be ſteered right againſt the tide till the anchor is up and ſtowed, and the ſails with which the ſhip is to work are all ready.

Haul the wind and get ready for tacking, when you are cloſe over to one ſide, to gain the whole breadth of the channel for getting underway. For this purpoſe, let the firſt trip be made as ſhort as poſſible, till it is found how the ſhip works upon both tacks; and then make longer or ſhorter boards accordingly, but take care not to ſtand into an eddy tide, on either ſide, which has often occaſioned ſhips to miſs ſtays, and go on ſhore. If a ſhip will not ſtay, ſhe muſt be veered, box hauled, or club hauled.

OF VEERING.

TO VEER A SHIP WITHOUT LOSING THE WIND OUT OF HER SAILS.

TO execute this evolution, both the main ſail and mizen muſt be hauled up, the helm put a weather, and the mizen topſail a ſhivering, which will be kept ſo till the wind be right aft, ſuppreſſing for that purpoſe the effect of all the ſtayſails abaft the center of gravity. As the ſhip falls off, (which ſhe will do very rapidly,) round in the weather braces of the ſails on the fore and main maſt, keeping them exactly trimmed to the direction of the wind, and remembering alſo that the bow-lines are not to be ſtarted till the ſhip begins to veer. As ſhe falls off, eaſe away the fore ſheet, raiſe the fore tack, and get aft the weather ſheet, as the lee one is eaſed off; ſo that, when the ſhip is right before the wind, the yards will be exactly ſquare. Then ſhift over the jib and ſtayſail ſheets; and the ſhip continuing her evolution, haul on board the fore and main tacks, and trim all ſharp fore and aft, remembering to haul aft the mizen and mizen ſtayſail ſheets as ſoon as they will take the right way, or when the ſhip's ſtern has a little paſſed the direction of the wind. When the wind is on the beam, right the helm, to moderate the great velocity with which the ſhip comes-to; the ſails being trimmed, ſtand on by the wind.

DEMONSTRATION.

THE main ſail and mizen are hauled up, and the mizen topſail ſhivered, in order to facilitate the evolution (§ 40 & 41). The main ſail, however, might be excepted from this rule, by letting go the main ſheet (§ 49), and working it like the main topſail. The helm is put a-weather, becauſe, in that ſituation, the rudder (§ 50.) cauſes the ſhip to fall off, or yield to the impulſe of the wind, by impelling the after part of the ſhip to windward with ſo much the more velocity as the power of the head ſails exceeds that of thoſe abaft (§ 47), and as, the rapidity of ſailing increaſing, the effect of the helm augments in the ſame proportion. The ſails are trimmed to the direction of the wind, as the ſhip veers, to increaſe her head way, and of courſe the power of the rudder (§ 58); which, in great evolutions, is the chief mover, and principal agent of the movement of the ſhip. So that, its effects being augmented, the ſhip's circular motion is of courſe accelerated in the ſame ratio; and, if the wind be well followed, every ſail will be found properly trimmed when the evolution is finiſhed. Since the ſails muſt kept in a proper ſituation with reſpect to the wind, except the mizen topſail, (which, from its ſituation on the after extremity of the ſhip, would retard her veering), the fore ſheet muſt be eaſed off to leeward, and gathered aft to windward, but in proportion as the ſhip falls off. It is alſo evident, for the ſame reaſon, that the bowlines muſt not be ſtarted, till the ſhip begins

to veer. When the wind is right aft, the jib and ſtayſail ſheets, which are then becalmed by the ſquare ſails, are ſhifted, becauſe the ſhip coming to the wind, they are ready trimmed, and highly ſerviceable in keeping her under command.

The mizen is hauled out as ſoon as the ſhip's ſtern has paſſed the direction of the wind, to accelerate her coming to (§ 40); and the ſails fore and aft ought to be trimmed ſharp at the ſame moment, in order to keep to the wind without loſing any time. For the above-mentioned reaſons the main tack is got on board, and the ſheet aft, when the wind is on the quarter.

TO VEER A SHIP THAT HAS LOST HER FORE MAST.

RUN out the end of a cable or hawſer over the lee-quarter, and buoy it up from the ground with empty caſks, &c. in caſe of coming into ſhoal water, with little wind. This will aſſiſt the helm with ſuch power, as to make the ſhip veer and ſteer at pleaſure.

A ſpare yard or boom, rigged out abaft the mizen ſhrouds, may guy the end of the cable or hawſer more or leſs on either quarter, according as the ſhip may have occaſion to ſail. It may be eaſily ſhifted from ſide to ſide, and guyed out to leeward in proportion to the ſhip's griping, to anſwer ſailing upon both tacks: and, when ſailing before the wind, it may be ſecured over the middle of the ſtern, which will prevent the ſhip's broaching-to againſt the helm either way.

This would likewiſe much aſſiſt deep-laded bad ſteering ſhips, and prevent their broaching-to; to which they are liable in ſpite of the beſt helmſmen, often occaſioning them to lie-to, even with a fair wind. With a little contrivance, by blocks, laſhed to the rails on the quarters, to lead the guys fair to the ſteering wheel barrel, it may be made to ſteer a ſhip that has loſt her rudder: The invention of Capt. Pakenham is, however, far preferable for this purpoſe.

TO VEER WHEN LYING-TO UNDER A MAIN SAIL.

ADVANTAGE muſt be taken of the ſhip's falling off to put the helm a-weather, and eaſe away the main ſheet roundly; and, when the ſhip has fallen off about 30°, let go the main bowline, and round in the weather brace, taking care to keep the ſail full. When the ſhip is before the wind, get on board the main tack, and right the helm, to moderate her coming-to.

If, in the beginning, the ſhip is found difficult to veer, the fore ſtayſail may be hoiſted, and the ſheets hauled well aft: but it is to be hauled down as ſoon as the ſhip is before the wind.

DEMONSTRATION.

OPPORTUNITY muſt be taken of the ſhip's falling off, becauſe that motion of the ſhip gives her way, and makes her of courſe better diſpoſed to gather way. For that reaſon alſo the helm is then put a-weather (§ 50, 58), and the main ſheet eaſed off roundly (§ 49.) that only that part of the ſail which is before the center of gravity of the ſhip may be left to act. The main bowline is kept faſt till the ſhip has fallen off 30°, at leaſt, and then let go directly, becauſe the wind is then more eaſily kept in the ſail, the velocity of the ſhip increaſed, and conſequently the power of the

helm (§ 58.) and the movement of rotation is alſo accelerated (§ 16, 17, 18). By hauling in the weather brace, you follow the wind with the ſail; and when the wind is right aft, that ſail will be found ſquare. To trim it, you have but to eaſe off the brace, and bring the tack on the ſame board as you take the wind; an operation for which you have full time ſufficient, as, by righting the helm, you moderate the velocity with which the ſhip flies to the wind, ſince by that action the effect of the rudder is totally ſuppreſſed.

A SECOND METHOD.

MAKE faſt a four inch rope to the ſlings of the main yard; and when the ſhip comes-to, ſo as to ſhiver the main ſail, bring it down before the ſail to the topſail-ſheet-bits, and let it be hauled tight and belayed. Then, as ſoon as ſhe falls off, put the helm a-weather, and let go the main ſheet. By theſe means the lee part of the ſail no longer has any power to keep the ſhip to the wind, and the weather part acting before the center of gravity will cauſe her to veer faſter than by the firſt method; though, in general, the firſt method will anſwer the purpoſe.

TO VEER UNDER BARE POLES.

THE fore ſtayſail muſt, if circumſtances will allow it, be hoiſted (§ 31). But, if that cannot be done, the head yards are to be braced up as ſharp as poſſible, and thoſe abaft pointed to the wind. Then, if the ſhip veers, ſhe will ſteer under the maſts and ropes only. A number of ſea men, ſent up and placed cloſe to each other in the weather fore ſhrouds, will be found alſo of very great ſervice.

TO BOXHAUL A SHIP, OR THE SECOND METHOD OF VEERING.

IN this evolution, the moſt rapid execution is neceſſary. Briſkly, and at the ſame inſtant, haul up both the main ſail and the mizen; ſhiver the main and mizen topſails; put the helm hard a-lee; raiſe the fore tack; let go the head bowlines, and brace about the head yards ſharp the other way; and let the jib and ſtayſail ſheets go in the ſame inſtant. When the ſhip has fallen off 90°, brace the after yards ſquare, in order to give the ſhip a little way, and to help her (with the rudder, the ſituation of which muſt be changed) to double the point where all the ſails ſhiver; and, when the wind is aft, you will proceed as in the method of "*Veering without loſing the wind out of the ſails.*"

If the circular motion of the ſhip, after ſhe has fallen off 90°, continues pretty rapid, the filling of the after ſails, to give the ſhip headway, may be diſpenſed with; becauſe ſhe continues to turn by the effect of her helm, which muſt not be ſhifted (§ 58), ſince the veſſel ſtill continues her ſternway. Therefore, after having veered a few degrees more, the wind will fill all the ſails, and the ſhip conſequently, will have headway (§ 35 & 43). Then change the ſituation of the rudder (§ 50), to bring her before the wind.

In a caſe of abſolute danger, when it might be neceſſary to go a-ſtern and fall off more rapidly, put the helm a-lee, brace all the ſails a-back, obſerving not to brace the after ſails more than ſquare, that they may not counteract the head ſails, which are braced ſharp a-back to pay the ſhip's head off;

becauſe the effect of the afterſails, in this ſituation, is to impel the ſhip abaft in the direction of her keel (§ 36); which, with thoſe forward, contribute to give her freſh ſternway, in order to cauſe the ſhip to veer (§ 58.) with greater celerity. The jib and fore topmaſt ſtayſail ſheets being hauled over to windward, will aſſiſt the ſhip in falling off and going a-ſtern, (§ 31).

When a ſhip is taken a-back, by bad ſteerage or a ſhift of wind, ſhe may ſometimes be broughto n the ſame tack again, by inſtantly bracing ſharp round the head ſails, and keeping faſt the jib and ſtayſail ſheets. One muſt recollect, alſo, the afterſails are not to be touched (§ 45), till the ſhip has ſufficiently fallen off; and, when that ſhall be the caſe, trim the ſails and ſtand on as before. The rudder is to be uſed, as occaſion may require, according to § 50 and 58, whether the ſhip has head or ſtern way.

DEMONSTRATION.

THIS operation ſhould be performed with the greateſt alacrity, becauſe it is only practiſed in critical ſituations; ſuch as finding the ſhip unexpectedly too near the land, or becauſe the ſhip miſſes ſtays.

The reaſons for hauling up the main and the mizen ſails, and ſhivering the mizen topſail, having been given before, we have only to add, that the reaſon why the main topſail is ſhivered is, that, if it were kept full, it would bring the ſhip to the wind (§ 41), by ſhooting her a-head, ſo that ſhe would almoſt be laid-to. If this ſail were braced a-back, more than perfectly ſquare or perpendicular to the keel, it would ſtill keep the ſhip to the wind, ſince it would be braced the ſame way with the head ſails. Therefore, it would impel the afterpart of the ſhip to leeward (§ 44), and act conſequently againſt the power of the head ſails, which ought to cauſe the ſhip to veer rapidly, becauſe they receive the wind on their anterior ſurfaces (§ 37, & 38.) with a very great ſine of incidence. It is therefore abſolutely neceſſary to keep the after ſails ſhivering till the ſhip has fallen off 90°, or thereabouts; becauſe, then, all the ſails are trimmed and ſhivering in the ſame direction, ſince the head ſails were ſuddenly braced ſharp a-back, in the beginning, to promote the ſhip's veering; and the after ſails were alſo changed at the ſame time, by bracing them by little and little to the wind, to keep them ſhivering, as the ſhip falls off. If the ſails are well worked, they will all be found ſhivering at the ſame time; and then they no longer act on the ſhip, which will not double this point by the ſole effect of the helm, for the helm was put hard a-lee in the beginning, to heave up in the wind, with all poſſible expedition; but the ſhip, ſoon after getting ſternway, falls off rapidly, both by the effect of her ſails, and by that of her rudder, which is well diſpoſed for this movement (§ 58), but has not always ſufficient force to cauſe the ſhip to double the point where all her ſails ſhiver; becauſe the wind, being then on her quarter, acts on the whole machine, to ſend her a-head; ſo that, if one ceaſed working here for a moment, the ſhip would be motionleſs for a time, having loſt her ſternway. To put her again in action, and prevent her from driving more than is neceſſary to leeward, fill the after ſails, as mentioned above, to give her headway, in order that, by ſhifting the helm (§ 50), the wind may be quickly brought aft.

The jib and ſtayſail ſheets are let go, becauſe they tend to draw the ſhip a-head (§ 31).

Boxhauling is deemed the ſureſt and readieſt way to get a ſhip under command of the helm and ſails, with the leaſt loſs of ground to leeward, when a ſhip refuſes ſtays. The maſters of ſloop-rigged veſſels, turning to windward in narrow channels, when they want but little to weather a certain point, run up in the wind till the headway ceaſes, then they fill again upon the ſame tack: this

they call making a *half-board*. Thus a ſhip, in boxhauling, may be ſaid to make two half-boards, firſt running with her head, then with her ſtern, up in the wind; by which two motions a ſhip rather gains to windward.

TO CLUBHAUL A SHIP.

CLUBHAULING is practiſed when it is expected that a ſhip will refuſe ſtays upon a lee ſhore. Place the hands to their ſtations for putting the ſhip about, and ſome by the lee anchor; then put the helm down, and if the ſhip make a ſtand before ſhe brings the wind a-head, let go the anchor, and haul the main ſail. When the wind is a-head, cut the cable, and the ſhip will caſt the way required. The afterſails being full, let go and haul.

ANOTHER METHOD.

BEND a hawſer to the kedge anchor on the lee bow, and bring the end into one of the after ports, or over the taffarel. Let go the anchor, brace up all ſharp the contrary way, put the helm a-lee, and haul in briſkly on the hawſer. As ſoon as ſhe gets head way, cut or ſlip the hawſer, and carry a preſs of ſail.

OF LYING-TO, &c.

OF LYING-TO IN FAIR WEATHER.

LYING-TO is the art of diſpoſing the ſails in ſuch a manner, that, counteracting each other, they render the ſhip as it were, for a time, immoveable.

This is ſeldom practiſed but under the three topſails; yet it is indifferent whether the fore or main topſails be braced a-back, or kept full; becauſe, as theſe two ſails have ſurfaces nearly equal, they have nearly the ſame power either to ſtop the ſhip's way, or to cauſe her to run a-head. When theſe two ſails act together, or one againſt the other, one always tends to pay the ſhip's head off, and the other to keep her to the wind (§ 32, 37, 41, & 44). But there are other conſiderations to be attended to, when neceſſity requires this operation to be practiced.

TO LIE-TO TO WINDWARD OF A SHIP, SO AS NOT TO DRIFT NEAR HER.

THE main topſail muſt be braced ſharp a-back, keeping the fore and mizen topſails full; becauſe the wind acts with a very ſmall fine of incidence on a ſail when full, in compariſon to what it does

when braced ſharp a-back: ſo that the fore topſail, being full, draws the ſhip a-head, and the effect of falling off is oppoſed by the main and mizen topſails. She will of courſe not fall off much; nor will her leeway be very conſiderable; for the ſhip is well kept to the wind, by the diſpoſition given to her ſails.

TO LIE-TO UNDER THE LEE OF ANOTHER SHIP.

THE fore topſail ought to be braced ſharp a-back, the main and mizen topſails kept full, becauſe theſe two laſt-mentioned ſails tend to give the ſhip headway, and keep her to the wind: they may be aſſiſted by the mizen, which will oppoſe the falling off occaſioned by the fore topſail. Thus, ſhould the ſhip to windward fall off violently, or drift too much, you are more ready to veer ſhort round, and avoid being boarded; becauſe the fore topſail being braced ſharp a-back, the impulſe of the wind on it is much greater than if it were full; and it is well diſpoſed to veer ſuddenly, as ſoon as the power of the other ſails is ſuppreſſed.

TO BRING-TO WITH THE FORE OR MAIN TOPSAILS A-BACK TO THE MAST, OR FILLED.

EITHER the fore or main topſail muſt be braced ſharp a-back, and the lee bowline hauled up a little: the other two topſails trimmed ſharp; with the mizen hauled out, and the helm a-lee.

If you bring-to with the fore topſail to the maſt, the head yards may be only laid ſquare. Then the wind will act obliquely on the ſail, and the ſhip will fall off but little, becauſe its effect is in the direction of the keel from forward aft, and the ſails abaft keep the ſhip to. The main topſail may be worked in the ſame manner, if you wiſh not to expoſe yourſelf much to the wind.

DEMONSTRATION.

IT has already been demonſtrated, that if the fore or main topſail be braced ſharp a-back, while the other remains full by the wind, the ſhip ſtands as if it were immoveable, for their actions are abſolutely contrary with reſpect to the center of gravity (§ 18), and very nearly equal; therefore, in this ſituation, the ſhip can but drive to leeward at the rate of about half a league an hour.

TO BRING-TO WITH THE THREE TOPSAILS A-BACK.

THE jib and ſtayſails being hauled down, brace ſharp round at once all the ſails you wiſh to lay a-back in hauling up the lee bowlines, the better to expoſe the ſails to the action of the wind; haul out the mizen, and put the helm hard a-weather.

DEMONSTRATION.

THE jib and all the ſtayſails are hauled down, becauſe they are before the center of gravity (§ 31); and the head ſails being braced ſharp a-back, have force enough (§ 37.) to balance the effect of thoſe abaft (§ 44); which, being braced in the ſame manner, receive the wind with the ſame fine of incidence as thoſe forward. But, as, in that ſituation, the head ſails have more power to cauſe the ſhip to fall off (§ 12.) than thoſe abaft, being a little becalmed by thoſe forward, have to bring her to the wind, the mizen is hauled out (§ 40), and the helm is put a-weather (§ 58), becauſe the ſhip goes a-ſtern with all the topſails to the maſt. In this ſituation, then, the ſails, aſſiſted by the rudder, act the one againſt the other, and balance reciprocally their effects of ſpringing the luff and falling off: and, though the ſhip goes a-ſtern and drifts a great deal, ſhe is layed-to; becauſe, in that ſituation, ſhe yields but with great difficulty to the impulſe of her ſails, on account of the reſiſtance of the water (§ 5.) oppoſed to the very great ſurface of her bottom under the lee.

If there were occaſion to keep the mizen topſail full, it might be done with advantage; becauſe the effect of its acting againſt the other ſails is ſo inconſiderable, that it cannot admit of a compariſon, as its ſurface is hardly half that of the main topſail.

If it be deſired to go a-ſtern without falling off, the head ſails are to be laid ſquare only.

TO FILL, WHEN LYING-TO WITH THE FORE TOPSAIL TO THE MAST.

BRAIL up the mizen, hoiſt the jib and fore topmaſt ſtayſail, ſhiver the main and mizen topſails; and, when the ſhip has fallen off 20° or 30°, fill the fore topſail, which was a-back before, and ſtand on.

DEMONSTRATION.

THE mizen is hauled up, that its effect of keeping the ſhip to the wind may ceaſe (§ 40). The jib and fore topmaſt ſtayſails are hoiſted, to help the ſhip in falling off (§ 31). The main and mizen topſails are ſhivered, becauſe their effects are contrary (§ 41. & 44.) to the movement expected from the ſhip. Every thing, therefore, which cauſes her keeping to the wind, ceaſing to act, and all that promotes her falling off, now operating, it follows that ſhe muſt fall off with a rapidity ſo much the greater, as the helm is ſtill a-lee (§ 58). The ſhip goes a-ſtern, ſince her head ſails are braced a-back, and her after ſails ſo diſpoſed and ſhivering, that, when ſhe has fallen off ſufficiently, the head ſails fill, and you ſtand on directly.

TO FILL, WHEN LYING-TO WITH THE MAIN TOPSAIL TO THE MAST.

BRACE ſharp and briſkly the fore topſail a-back; ſhiver the main and mizen topſails; hoiſt the jib and fore topmaſt ſtayſails, and brail up the mizen, all at the ſame time; and, when the ſhip has fallen off 20° or 30°, fill the fore topſail, and ſtand on.

If you are obliged to keep the wind on the ſame tack as that on which you are lying-to, you have only to right the helm, fill the topſail which is a-back, and trim it ſharp, to continue your courſe.

DEMONSTRATION.

THE fore topſail is braced ſharp a back, in order to cauſe the veſſel to fall off more readily, as then it receives a very ſtrong impulſe from the wind (§ 37): the reſt of the demonſtration will be found in the preceding.

A SECOND METHOD.

TRIM the topſail which was to the maſt, in order to give the ſhip way through the water, and be able to tack, or run large, according as may be found neceſſary. But this method is very tedious, unleſs you mean to heave in ſtays, in which caſe it will be moſt expeditious.

A THIRD METHOD.

SHIVER the main and mizen topſail, keeping the fore topſail full, righting the helm, and running up the jib and fore topmaſt ſtayſail at the ſame time. As ſoon as the ſhip has fallen off enough to get headway, fill the after ſails, and keep the ſhip in the direction you mean to follow. It is eaſily ſeen that this method, though the moſt common, is not the moſt expeditious, when you have to veer conſiderably.

TO FILL, WHEN LYING-TO WITH ALL THE SAILS TO THE MAST.

BRAIL up the mizen, lay the after yards ſquare, and ſhift the helm a-lee. When the ſhip has fallen off ſufficiently to fill the after ſails, thoſe forward are then to be braced about and trimmed full alſo, in order to ſtand on.

DEMONSTRATION.

THE mizen is brailed up, becauſe its effect is to keep the ſhip to the wind (§ 40). The after yards are laid ſquare, becauſe then they give the ſhip ſternway (§ 36), which cauſes her to fall off, ſince they increaſe her velocity in the laſt-mentioned direction, the helm being a-lee ſo as to turn the ſtern to windward (§ 58). The head ſails are braced about and filled at the ſame time as the after ſails are, that the ſhip may not be as it were laid-to, and that ſhe may get headway to continue her courſe.

OF LYING-TO IN A GALE OF WIND.

TO lie-to, when it blows hard, is to keep as cloſe to the wind as poſſible under ſome one ſail well trimmed, with the helm laſhed a-lee as much as may be requiſite for the ſhip: and, as ſhips commonly bring-to from the ſtreſs of contrary winds, care ſhould be taken to heave-to under that which will leaſt ſtrain the ſhip; becauſe there are ſome ſhips which lie-to better under the fore ſail than the main ſail; others are more eaſy under the main ſail; ſome under a mizen; and many veſſels lie-to beſt under a main ſtayſail.

LYING-TO UNDER A FORESAIL.

THIS is advantageous for veering (§ 32.) when you are well to windward; but it augments the lee way, and is more ſubject to break the ſea on board, on account of the ſhip's continual falling off: becauſe, in that movement, ſhe gathers way by yielding to the impulſe of the gale, and is afterwards recalled to the wind by the helm (§ 50): ſo that, in ſpringing the luff, ſhe meets the wave which comes from to windward.

LYING-TO UNDER A MAINSAIL.

THE ſhip does not, in this ſituation, fall off ſo eaſily as in the laſt-mentioned mode, becauſe its effect paſſes abaft the center of gravity of the ſhip (§ 41); but it keeps the ſhip more to the wind, and conſequently occaſions leſs lee way.

LYING-TO UNDER THE MIZEN.

UNDER the mizen, ſhips keep better to the wind, than under any other ſail, becauſe it is farther abaft the center of gravity (§ 40.) than any of the reſt; conſequently ought to keep the veſſel from drifting more than any of the others; but it is inconvenient, ſhould you have occaſion to veer ſuddenly.

LYING-TO UNDER THE MAIN STAYSAIL.

UNDER the main ſtayſail a ſhip will not make ſo much leeway as under a fore ſail, becauſe its effort paſſes very near the center of gravity; but it will however cauſe her to drift more (§ 31.) than the main ſail (§ 41): ſo that this mode of lying-to is a mean between the two others, and is preferable when it blows ſtrong enough for that ſail to ſupport the rolling of the ſhip. It ought likewiſe to be preferred, becauſe the ſhip will veer under that ſail, the action of which paſſes at a ſmall diſtance from the center of gravity (§ 31), and the power of which overcomes the reſiſtance which all ſhips meet from the fluid under their lee; a reſiſtance which always gives them a great inclination to fly up in the wind, when it blows hard, or when under a heavy preſs of ſail.

LYING-TO UNDER THE FORE, MAIN, AND MIZEN STAYSAILS.

ALL the preceding modes of lying-to have their peculiar faults; but the preferable way is under the fore ſtayſail, the main ſtayſail, and mizen ſtayſail; becauſe, under theſe ſails, the ſhip will ſteer (§ 46), and is in a better ſituation for veering than under any other ſail; for, only haul down the mizen ſtayſail, and put the helm a-weather; when the two other ſails, being before the center of gravity, (§ 30, & 31.) will cauſe her to fall off; ſhe will then ſoon gather way, and ſteer eaſily.

Should the gale continue very hard, and one of theſe ſtayſails be blown away, the loſs is not of much conſequence, as the courſes, in caſe of an emergency, are ready to ſet; whereas the courſes are not ſo readily replaced, when loſt. This mode, therefore, appears preferable in every reſpect*, whether you wiſh to veer, or keep your wind: becauſe, if the ſhip does not ſufficiently keep the wind, you may haul out the balanced mizen (§ 40), or take in the fore ſtayſail (§ 31), or even the main ſtayſail. One of theſe ſtayſails, before the center of gravity of the ſhip, is ſufficient to make her veer as ſoon as the after ones are ſuppreſſed. There are, beſides, theſe following conſiderations for ſo doing. The ſhip will carry ſail better; becauſe, as the center of effort of thoſe on her is very low, ſhe drifts leſs, holds a better wind, and goes faſter through the water (§ 25, & 46); and theſe three or four ſails are ſo ſituated as to give the whole body of the ſhip play; which will ſtrain her leſs than when under one ſingle ſail, which cannot by itſelf work it from aft forward.

DEMONSTRATION.

THE object of lying-to being to keep to windward as much as poſſible, when foul winds, and tempeſtuous weather, prevent you from purſuing your courſe, it follows, as much ſail ſhould be carried, as is conſiſtent with ſafety; and, as you are often unable to ſet more than one ſail, it is trimmed ſharp, that the ſhip may keep her wind as much as poſſible. It is likewiſe for this reaſon that the helm is at the ſame time put a-lee; becauſe the ſhip having but very little way (§ 46), falls off, in yielding from time to time to the impulſe of the wind, which unceaſingly acts on her; but, as ſoon as ſhe has fallen off, ſhe is brought-to again by the effect of the rudder (§ 50), which muſt act upon her if the water has the ſmalleſt power upon it.

The ſame happens in lying-to under the three ſtayſails (though the ſhip makes more headway under any other ſail), becauſe the effect of theſe ſails is better diſtributed (§ 46.) than when one only is ſet; notwithſtanding they have not power enough to procure the ſhip much velocity, nor to make her ſteer properly; the helm is therefore put a-lee as in lying-to under any other ſail. It is always more advantageous to keep the ſhip under way and lively, than to let her lie motionleſs, at the mercy of the wind and waves.

When the wind is ſo violent that no ſail can be carried, you lie-to a-try; that is to ſay, under bare poles and ropes, which ſerve inſtead of ſails, and laſh the helm a-lee as uſual.

OF SOUNDING IN FAIR WEATHER, WHETHER CLOSE HAULED OR GOING LARGE.

CLOSE HAULED.

IF cloſe hauled, brail up the mizen and mizen ſtayſail; let go the main ſheet that the ſail may ſhiver; put the helm a-lee; and back the mizen topſail by bracing it ſquare. The head ſails, as well as the jib and ſtayſails, are to be kept in their firſt ſituation; recollecting to haul tight and belay the

* Should the ſea run too high for the lower ſtay-ſails to keep the ſhip ſteady, a cloſe-reefed main-topſail (particularly if it has four reefs in it to come cloſe down to the cap) will be found to anſwer the purpoſe admirably.

lee braces. When the ſhip has nearly loſt her headway, though continuing ſtill to come to the wind, you catch that moment to heave the lead; and it is to be hauled in again with all poſſible diſpatch. To fill again, haul aft the main ſheet; trim the mizen topſail, and right the helm.

GOING LARGE.

IN going large, you have only to put the helm a-lee, to brail up the mizen, and to belay the lee braces quite tight, to prevent the yards having too much play when the ſails are ſhivering. It is impoſſible to tack in this ſituation, as the jib and head ſails are always in action (§ 31); and the ſquare ſails ſoon coming to ſhake, on account of their ſheets not being tacked, they loſe all their power; and the ſhip is ſoon at a ſtand.

DEMONSTRATION.

THE mizen and mizen ſtayſail are brailed up, becauſe their effect to bring the ſhip to the wind would be too powerful (§ 40). For the ſame reaſon the main ſheet is let go (§ 41), though there is another reaſon for it, which is, that it deſtroys the equilibrium that exiſted between the ſails forward and the ſails aft (§ 46, 49); whence the rapidity of ſailing is diminiſhed, as well as the effect of the helm, which acted (§ 50.) to bring the ſhip to the wind, while at the ſame time it oppoſes her velocity (§ 59). The mizen topſail is braced a-back, to impel the ſhip a-ſtern in the direction of her length (§ 36); ſo that her headway being now much diminiſhed, the ſhip, by the effect of the rudder, ranges to the wind ſo far as to ſhake the main topſail and the ſails on the foremaſt, which, to that very moment, had acted to keep up the celerity of ſailing (§ 32. 41). But, as the effect of the rudder is very faint, ſince the velocity of the ſhip is greatly diminiſhed (§ 58), when the ſails have loſt their action, the ſhip muſt ſtop, and is not able to come ſufficiently to the wind, to bring her about, becauſe the jib and ſtayſail ſheets being hauled aft, oppoſe the effect of the helm; ſo that ſhe reſts as it were motionleſs for an inſtant, which muſt be ſeized to throw the lead with the greateſt diſpatch; becauſe, ſhould the ſhip fall off by the effect of her jib and ſtayſail, which are the only ones in action, the other ſails might ſuddenly fill and give her headway, which would prevent you from getting ſoundings, were you too dilatory in throwing the lead. Whether you do, or do not, find any bottom at all, in hauling in your line as faſt as poſſible, you muſt ſeize the opportunity of the ſhip's falling off, to fill and ſtand on again.

If the ſhip, in ſpite of the diſpoſition given her, ſhould come head to wind, (which could only happen from her having preſerved ſome velocity,) the helm muſt be kept a-lee, but the head ſails ſhould quickly be laid ſquare, and the jib and ſtayſails hauled down; then the ſhip will ſoon after be found to veer.

ANOTHER METHOD PREFERABLE TO THE FORMER.

GOING LARGE.

BRACE the head ſails ſquare, haul down the jib and ſtayſails, without ſtirring the after ſails, and put the helm a-lee. While the ſhip has ſtill a little headway, heave the lead from the place where you haul it in; that lead will go firſt a little a-ſtern; but the ſhip being head to wind, will ſoon herſelf go a-ſtern right upon the line; and, as the helm is a-lee, the ſhip eaſily veers. But, if you wiſh to keep her to longer, right the helm, and haul the mizen out, to prevent the ſhip's falling off.

If you have ſtudding ſails ſet, they muſt be hauled down, particularly the lower ones; becauſe, ſhould the wind take them a-back, their power on the boom might bring the ſhip round entirely:

for, they act on a lever without the ſhip, the fulcrum of which is on the outſide of the veſſel before the center of gravity. If, however, the helm is continued a-lee till the ſhip falls off, ſhe will not come about, becauſe then the veſſel goes a-ſtern with great velocity, and the rudder acts powerfully to make her veer; but the fact is, that the ſhip will go a great deal ſternway, and continue ſo much longer.

CLOSE HAULED.

IF cloſe hauled, or a very little from the wind, the helm is to be put a-lee; and, the inſtant the ſails are taken a-back, the head ſails are to be filled by briſkly bracing them ſquare, without waiting for the wind being right a-head; then, a little before the ſhip has loſt her way, heave the lead from the place where you haul it in, and then proceed as before.

ON SHIPS DRIVING.

WHEN it happens that there is not ſufficient room to work in a tide's way, through a crowd of ſhips, or in a narrow channel, but that a ſhip muſt drive by the help of the tide, it may be done, provided the tide be ſtrong enough, in proportion to the wind. This art conſiſts of keeping the ſhip in a fair way, by a management of the rudder and the ſails.

TO DRIVE TO WINDWARD, WHEN THE WIND IS AGAINST THE TIDE.

IF the channel is ſufficiently broad, the ſhip ſhould be drifted broad ſide to the wind, as the tide will then have the greateſt power on her; and, could the ſhip be backed a-ſtern or ſhot a-head at pleaſure, ſhe might be kept drifting upon the ſame tack with ſafety; but ſhips in a tide's way can never be backed ſo far a-ſtern as they will ſhoot a-head. At the firſt of a ſtern-board a ſhip will go briſkly a-ſtern, but will ſoon fall off, and drift with the wind abaft the beam, forging a-head; for this reaſon ſhe muſt be drifted with the helm a-lee. It follows, as a ſhip will ſhoot more a-head than ſhe can be backed a-ſtern, that ſhe will at length arrive at the oppoſite ſhore, when ſhe muſt be ſtayed or veered, and drifted upon the other tack. If ſhe is to be ſtayed, (which is preferable, becauſe leſs drift will be loſt by it,) let the ſails be filled in time, to give the ſhip ſufficient headway to bring her about; then put the helm a-lee. Should ſhe come about, the ſails and helm, having now a proper poſition for a ſtern-board upon the other tack, need not be touched till her ſternway ceaſes, when the helm muſt be ſhifted a-lee; but, ſhould the ſhip refuſe ſtays, then brace ſharp round the head yards, and box-haul her, by which method ſhe will loſe much leſs drift than by veering.

If the ſhip, now drifting broad-ſide, is approaching a narrow channel, where drifting in this poſition, ſhe muſt be veered and dropped ſtemming the tide, ſtern foremoſt. In this caſe, that the

drift may be as much as poſſible, it will be neceſſary to take in ſail, and reduce the ſhip's headway till ſhe has only ſteerageway left; thus a veſſel may be dropped through a fleet of ſhips at anchor without danger.

TO DRIVE, WHEN THE WIND IS ACROSS THE TIDE.

SHOULD the wind be a little acroſs the tide, a ſhip may be eaſily drifted in the fair way, with her head towards the weather ſhore; for thus it will be found that ſhe can be backed and filled at pleaſure, and generally be drifted with the ſails ſhivering, in which poſition they oppoſe leaſt power to prevent the drift.

It frequently happens in ſerpentine rivers that the tide ſets acroſs; in this caſe the ſhip muſt be drifted with her head to the ſide from which the tide ſets. Theſe ſets are beſt diſcovered by obſerving the opening or ſhutting of two objects in the direction of the channel.

TO BEND A COURSE IN FAIR WEATHER.

STRETCH the ſail a-thwart the deck, the ſtarboard ſide of the ſail to the ſtarboard ſide, the larboard to the larboard ſide; then bend yard ropes to the earing cringles, and make faſt the head earings a few feet up upon the yard ropes. The bunt-lines, leech-lines, clue-garnets, and all the geer bent, make faſt a rope-band to each bunt-line and leech-line leg, that the men may be enabled to catch the head of the ſail from the yard. Now man well the yard ropes, bunt-lines, leech-lines, and clue-garnets, and run the ſail up to the yard. The ſail aloft, ſend the hands up to bring it to, and let them haul out the weather earing firſt, then the lee; and if it is a new ſail, let them ride the head rope to ſtretch it. The ſail being hauled ſquare out upon the yard, make faſt the rope-bands, keeping the head of the ſail well upon the yard.

TO BEND A TOPSAIL IN FAIR WEATHER.

OVERHAUL the leeches of the ſail, put in the earings, bend the bowline legs, lay out the clues, and open them if neceſſary, and make the ſail up ſnug again; then round down upon the lee topſail haliards till the weather fly block is high enough to bring the ſail up over the guard iron: then rack the tie over to the weather rigging. Now pile the ſail upon ſlings, with the lee ſide uppermoſt; hook on the topſail haliards, and run the topſail up into the top; then ſtretch the ſail round the fore part of the top, bend the jeer, and make faſt the head earings a few feet up upon the reef tackle pendents, with a rope-band or two to each bunt-line leg. The jeer being bent, man the reef tackles, bunt-lines, and clue-lines, and haul out the ſail. Now let the hands lay out upon the yard, and haul out the weather earing firſt; then haul out to leeward, and eaſe off to windward till the ſail is ſquare, when make faſt the rope-bands, keeping the head of the ſail well up upon the yard.

UPON SETTING AND TAKING IN SAILS IN BLOWING WEATHER.

TO SET A MAIN SAIL.

BEFORE the ſail is looſed let the double block of a tackle be made faſt to the weather clue, and the ſingle block be hooked low down upon the cheſtree, and the fall led aft. Then man well the main tack and fall at the ſame time; and, when the ſail is looſed, eaſe away the weather clue-garnet, let go the bunt-lines and leech-lines, bowſe down upon the tackle and take in the main tack: the main tack being down, haul aft the ſheet, brace up the yard, and haul the main bow-line.

TO SET A FORESAIL.

A FORE ſail is ſet after the ſame manner as a mainſail; but, as the fore tacks generally lead double, they are a ſufficient purchaſe without the aid of a tackle to the weather clue.

TO SET A TOPSAIL.

LET a tackle be in readineſs to clap on either ſheet, as may be required. Firſt, man the lee ſheet, and the ſail being looſed, eaſe down the bunt-lines and weather clue-line, and haul home the lee ſheet; then haul home the weather ſheet, hoiſt the ſail, and brace up as required.

Should the wind be quartering, the lower and topſail yards ſhould be braced well into the wind, before the ſail is ſheeted home.

TO TAKE IN A COURSE.

MAN well the weather clue-garnet, eaſe off the tack and bow-line, and run it up; then man the lee clue-garnet, bunt-lines, leech-lines, and weather brace; and, being all ready, eaſe away the ſheet, haul up the clue-garnet, bunt-lines, and leech-lines, and round in the weather brace, till the yard is pointed to the wind. Then haul tight the truſſes, braces, lifts, and rolling tackle, and let the hands furl the ſail.

TO TAKE IN THE FORESAIL IN THE TIME OF VEERING.

WHEN the ſhip begins to veer, the yard being kept braced ſharp up, let go the tack and bow-line, and haul up the weather clue-garnet. When the ſhip is nearly before the wind, the bunt and leech lines, and the other clue-garnet, may be hauled up; and, if the ſituation admits of it, and occaſion requires, the ſhip may be ſteered with the wind on the quarter, till the ſail is ſecured.

TO TAKE IN A TOPSAIL.

THERE are many opinions upon the beſt mode of performing this. Some approve of clueing up to windward firſt, and others to leeward. If the weather ſide is to be clued up firſt, the weather brace muſt be rounded well in, and the yard got cloſe down upon the lifts, otherwiſe the lee rigging will be in danger of being carried away by the great preſſure of the lee yard-arm. If the weather brace can be rounded well in, and the yard be got cloſe down, it will be beſt to clue up to windward firſt, for thus the ſail may be taken in without a ſhake; but, if the weather brace cannot be hauled in to eaſe the yard off the lee rigging, recourſe muſt be had to clueing up to leeward firſt. In this caſe, it will be beſt, if hands can be ſpared, to man both the clue-lines, bunt-lines, and weather brace at the ſame time; thus, when the lee ſheet is eaſed off, the weather brace may be hauled in with eaſe, and the yard laid to the wind; and, when the lee clue-line is half up, eaſe off the weather ſheet, and run up the weather clue-line; then haul tight the lee brace, bowſe tight the rolling tackle, and furl the ſail.

TO TAKE IN A JIB.

MAN well the down-haul, let go the haliards, eaſe off the ſheet, and haul down briſkly; and, when the ſail is cloſe down, eaſe away the out-haul, and haul the ſail in to the bowſprit cap; then let it be ſtowed away in the fore ſtayſail netting.

TO HAUL IN A LOWER STUDDING SAIL.

TO haul in a lower-ſtudding ſail, blowing freſh, lead one of the ſheets clear aft, and man it well; then lower away briſkly the outer haliards, to ſpill the ſail; eaſe off the tack, run in upon the ſheet, and lower away the inner haliards as required.

TO HAUL DOWN A TOPMAST STUDDING SAIL.

MAN well the deck ſheet and downhaul, eaſe off the yard ſheet, and haul the yard cloſe out to the tack block; then eaſe away the tack; and haul down both upon the deck ſheet and downhaul.

TO BRAIL UP AND HAUL DOWN A MAIN TOPMAST STAYSAIL.

MAN well the lee brail and downhaul, having a few hands to gather in the ſlack of the weather brail; then let go the haliards, eaſe off the ſheet, and haul down and brail up as briſkly as poſſible. When the ſail is down, let go the tack, and ſtop the ſail over to the lee fore rigging.

TO BRAIL UP A MIZEN.

MAN well the lee brails, and in particular the throat brails, which ſhould have a whip purchaſe; eaſe off the mizen ſheet, and brail up briſkly, taking in at the ſame time the ſlack of the weather brail. After the ſail is hauled up, ſtop its foot by paſſing the gaſket round to leeward, which will ſpill it.

TO TAKE IN A TOPGALLANT SAIL.

THE lee ſheet muſt be ſtarted firſt; for, if the weather ſheet is firſt eaſed off, the yard will fly fore and aft.

TO UNBEND A COURSE.

FIRST furl the ſail, then caſt off the rope bands, and make them faſt round the ſail, clear of the gaſkets. When the rope bands are all off, eaſe off the lee earing, and lower down the ſail; and, when the people upon deck have got hold of the lee part of the ſail, eaſe away the weather earing.

TO UNBEND A TOPSAIL.

FIRST caſt off the points of the reefs, keeping faſt the earings; then furl the ſail, and caſt off the rope bands, which make faſt round the ſail, clear of the gaſkets. After this caſt off the lee earings, and haul the lee ſide of the ſail into the top; then haul in the weather ſide. Now unbend the reef tackle pendents, bunt-lines, and bow-lines; bight the ſail ſnugly up together; and ſend it down by the clue-lines to windward or leeward, as moſt convenient.

ON SCUDDING OR BEARING AWAY IN A STORM.

WHEN the waves run high, and ſudden neceſſity requires to bear away, it ſhould be conſidered that the lower ſails forward, which the ſhip may be veered under when ſhe comes before the wind, may be becalmed by the height of the waves breaking violently againſt the ſtern; and that therefore a cloſe-reefed main topſail ſhould be ſet to catch the wind, becauſe it is a loftier ſail, and may always be kept drawing full above the waves. This increaſes the ſhip's headway ſo much, that the waves will not ſtrike her abaft with ſo great a velocity as when her headway is leſs.

Hence it follows, that, when going to ſcud before high waves, the cloſe-reefed main topſail ſhould be the laſt ſquare ſail taken in, in a labourſome ſhip.

OF A SHIP OVERSET ON HER SIDE.

A COMMON, but not always a certain, method to recover ſhips from this dangerous ſituation, is to cut away the maſts: however, as this expenſive method may fail, ſtopwaters only, on the lee quarter at ſea, may cauſe the ſhip to veer; or, where there is ground, an anchor or anchors dropped from the lee bow, may bring the wind a-head, and take the ſails a-back, ſo as to caſt the ſhip on the other tack, and bring her upright.

ON CHASING.

A VESSEL that chaſes another ought to have the advantage of ſailing. We ſhall therefore ſuppoſe this to be the caſe; becauſe, were the ſhip chaſed as good a ſailer as the chaſer, ſhe never could come up with her, if they manœuvered equally and at the ſame time. It is then uſeleſs to chaſe a ſhip over which you have not the ſuperiority in ſailing, unleſs it be found that ſhe does not know how to take the benefit of her equality.

To know if your ſhip ſails quicker than your adverſary, you muſt get on the ſame tack, under the ſame ſails, and keep the ſame courſe with the veſſel you wiſh to chaſe, and ſet her exactly with a compaſs. If you ſail beſt, the chaſe will ſoon be drawn a point more aft; but, if ſhe has the advantage, you will in a ſhort time bring her a point farther forward: if you ſail equally, ſhe will remain on the point you ſet her at firſt.

TO CHASE A SHIP WHICH IS TO WINDWARD, AND TO JOIN HER IN THE SHORTEST METHOD.

WHEN the chaſer is to leeward of the veſſel he means to purſue, he ought to run on the ſame tack as the enemy, till he brings her to bear exactly perpendicular to his courſe, if he has not however already paſſed that point: then tack and continue the ſecond board till he brings the chaſe again perpendicular to the direction on which he is ſtanding by the wind, and he muſt then heave about again; always continuing the ſame manœuvre, by tacking every time he brings the chaſe perpendicular to his courſe on either board. In this manner, the chaſer will, by the ſuperiority only of his ſailing, join the other by the ſhorteſt method.

DEMONSTRATION.

WHEN the ſhip A (*fig.* 20.) chaſes the ſhip B, which is three leagues to windward, A having one-fourth of advantage in ſailing, the chaſer is not to tack till he reaches the point C; becauſe then the

ſhip B will be right on his beam at the point D. He then runs on the tack C E, till he brings the chaſe again perpendicular to his courſe at the point F. The ſhip A is to continue working thus every time ſhe brings the veſſel B right a-breaſt of her, whether the chaſe continues on the ſame tack or not; and thus the chaſer will join the other at H, ſo that ſhe will be able neither to change her courſe nor fly from him.

You continue on the ſame tack as the enemy, when firſt ſeen, in order to loſe no time; becauſe you will always bring the ſhip you are in chaſe of right on your beam, when you have a ſuperiority of ſailing, whatever may be the tack ſhe is on, provided you are careful not to paſs that point; but, if perchance you ſhould, you muſt get on the other tack with all poſſible diſpatch.

The chaſer heaves about as ſoon as the veſſel he is in purſuit of is on his beam; becauſe ſhe is, at this time, at the ſhorteſt poſſible diſtance, if he chaſes on the ſame tack and ſteers the ſame courſe with the veſſel chaſed. If the chaſer runs on a different tack from the veſſel chaſed, he is ſtill to tack when the latter is on his beam, becauſe the diſtance is the leaſt poſſible between them on the different boards they hold.

This mode is preferable to all others, it not only being the ſhorteſt, but becauſe you force the chaſe to fly from you cloſe upon a wind, preſſing her more and more from the leeward, by never paſſing the point at which the diſtance between the two veſſels, in plying to windward, is the ſhorteſt poſſible.

OBSERVATIONS FOR THE SHIP TO WINDWARD, WHICH IS CHASED.

THE weather ſhip, which flies, will always be joined by the chaſer, ſince it is granted that ſhe does not ſail ſo well as the purſuing veſſel. It is therefore her advantage conſtantly to keep one courſe without loſing time to heave about, as tacking cannot be ſo favourable to her as to her adverſary, whoſe ſailing is ſuperior.

If the chaſer ſhould miſtakingly ſtand on a long way, and tack in the wake of the chaſe, the beſt thing ſhe can do is to heave in ſtays, and paſs to windward of him on the other tack, unleſs you ſuppoſe your veſſel would have a large ſuperiority. If the chaſer perſiſts in tacking in the wake of the other ſhip, the chaſe will be very much prolonged.

TO CHASE A SHIP WHICH IS TO LEEWARD.

WHEN to windward of a veſſel you wiſh to chaſe, keep the ſhip away, to cut her off; and, ſteering continually on that courſe, you come at laſt together at the point where the courſes run by the two veſſels interſecting each other. This will be exactly executed by the chaſing ſhip, if, in the courſe ſhe has choſen, ſhe conſtantly keeps chaſe on the ſame degree of the compaſs, as at the beginning of the purſuit. This principle applies equally to all the courſes which the retreating ſhip ſteers; for overtaking can only be obtained by keeping on a ſtrait line, which is the ſhorteſt poſſible that can be drawn between any two points.

If you take another courſe than that which keeps you in the ſame point of bearing you were in with reſpect to the veſſel purſued, at the beginning of the chaſe, you would fail, by being either too

far a-head or too far a-ſtern; that is to ſay, if the chaſer keeps his wind too cloſe, he will be too much a-head, and conſequently prolong the chaſe; and, if he keeps too much away, he will be too far a-ſtern. Theſe are the only two conſiderations to be made for the performance of this manœuvre; conſiderations, which are eaſily obſerved, and corrected with an azimuth compaſs; for when you ſee that at the end of a certain time you bring the chaſe more aft than her firſt point of bearing, it is evident you keep your wind too much; if, on the contrary, you draw her forward, it is a proof that you keep too much away. Theſe errors are eaſily corrected, by ſteering, for the firſt caſe, ſo as to ſee that the chaſe is always kept exactly on the ſame degree of the compaſs; and, for the ſecond, you keep your wind a little more, till you ſee that you reſt on the ſame point of bearing with reſpect to one another. Then, it is evident, you chaſe by the ſhorteſt and moſt certain method, ſince you reach the chaſe, in running on a ſtrait line.

OBSERVATIONS FOR THE SHIP TO LEEWARD, WHICH IS CHASED.

SHE ought to run on the courſe that will carry her moſt immediately from the chaſer. Some veſſels have more advantage in going large than others; ſome with the wind right aft; and others, again, are to be found which go beſt cloſe hauled. So that attention ſhould be paid to the known qualities of a ſhip, in order to take the moſt advantageous and convenient directions capable to effect a retreat. It is, however, nearly certain, that, if the chaſe does not ſail at leaſt at an equal rate with the chaſer, whatever manœuvre ſhe may practiſe, ſhe will at length be overtaken by a ſkilful chaſer adhering to principles.

OF BOARDING.

BOARDING is the art of approaching the ſhip of an enemy ſo near, that you can eaſily, and in ſpite of him, throw on board the graplings, which are fixed on the lower yard-arms, at the forecaſtle, gangways, &c. for the purpoſe of being thrown into the enemy's ſhip, as ſoon as along-ſide, in order to confine the veſſels together, and give the people an opportunity of getting on board, to carry the adverſe ſhip ſword in hand.

TO BOARD TO WINDWARD, OR TO AVOID BEING BOARDED.

IF it be deſired to board a ſhip which keeps her wind under an eaſy ſail; or that does not ſhorten ſail, but over which the boarding veſſel has the advantage of ſailing; ſhe muſt get on the

weather quarter of the ſhip ſhe means to board, within half a piſtol ſhot. She ſhould then begin the action, and continue it with vivacity, to cover her manœuvre by the ſmoke of the cannon and muſquetry of both ſhips; then, under the cover of this cloud, let her make more ſail if ſhe has not way enough, in order to augment the velocity of the ſhip and the rapidity of her movements, that ſhe may more readily lay on board her enemy, on the weather ſide, either exactly a-breaſt or a little abaft. This is very eaſily executed, by edging down ſuddenly upon her; ſo, however, as not to be raked by the enemy's fire. The ſhip boarded by this manœuvre can hardly ſuſpect the deſign but at the moment when, or very little before, the grapnels will be on board of her. In this ſituation the boarded veſſel has but one doubtful expedient to try, and which even will be of no ſervice if the boarder obſerves her well. For, the moment ſhe braces ſharp a-back her head ſails, to cauſe the ſhip's falling off (§ 37), and ſquares thoſe aft (§ 36.) to give her ſternway, the boarder has only to perform briſkly the ſame manœuvre, and they will then be both as near for boarding as before, provided the boarding ſhip feels quickly the impulſe of her ſails and helm, which ought to be put a-weather (§ 50.) and kept ſo till the ſhip's headway ceaſes, when it is to be put a-lee (§ 58), to aſſiſt her in falling off, in manœuvering as is box-hauling, in order to board the enemy to leeward; for, the boarder ought to be on the quarter of the other, ſince at the moment the two ſhips were right before the wind, ſhe who was directly to windward, and wiſhed to board, had only to continue her movement of rotation, and render her velocity equal to that of her adverſary, by ſhortening ſail in order not to paſs her. If therefore, the circular motion is kept up by the boarder, which at firſt cauſed him to fall off, and now brings him to the wind on the other tack, he will join the enemy to leeward; for, it is evident that, if this motion of turning be more rapid than that of the ſhip which wiſhes to avoid boarding, the boarder will cloſe her before ſhe can range to the wind on the other tack, ſince the boarder comes round with greater celerity. However, if the ſhip which fears boarding was preſſed thus cloſely, ſhe could make no other attempt than to throw once more all her ſails to the maſt, by bracing them only perpendicular to the keel to give her ſternway (§ 36), and putting the helm a-weather, to keep her to the wind, as ſoon as her headway ceaſes (§ 58); obſerving that, ſhe being to windward, this manœuvre may cauſe her to drive on the boarder, as he is then watching for her under her lee. As there is no other reſource, neceſſity obliges her to this expedient; becauſe, if the ſhip which is attacked could go a-ſtern with ſufficient velocity, ſhe might let the boarder paſs a-head, veer under his ſtern, and rake him, if he is not as quick as the other to foreſee this manœuvre, and as nimble in manœuvering in the ſame manner as the enemy's ſhip: becauſe, the great velocity with which he comes to the wind and goes a-head (his ſails being ſtill full), puts him in this bad ſituation, which may prevent his perſiſting in the inclination of boarding. It is however very clear that the boarder will attain his purpoſe, if he takes care to throw all his ſails a-back at the ſame time as the ſhip to windward; becauſe, the attacked ſhip dropping to leeward, and having ſternway firſt, approaches a little the boarder, who has ſtill preſerved his poſition on the quarter, and longer kept his luff, by having gone a-ſtern ſomewhat later than the weather ſhip. It muſt be farther obſerved, that when the two ſhips are right before the wind, if the veſſel which fears boarding moves quicker to the wind than the one which attacks, ſhe will avoid it, as the retreating ſhip will be cloſe to the wind before the other, and able to get a-head of her by making all ſail to keep her wind, or to heave in ſtays and get upon the other tack. But, it muſt be conſidered that this laſt movement is diſadvantageous; as, by ſo doing, it will preſent the ſtern to a ſhip,

which no doubt will take advantage of that ſituation, and rake her; which might be more deſtructive than a well-oppoſed attack by boarding.

There is, however, no doubt that if the ſhip inclined to board ſails better than the other, it will always be in her power to execute that deſign, if ſhe is manœuvered as the ſhip which flies.

TO BOARD TO LEEWARD, WHEN CLOSE TO THE WIND, OR TO AVOID BEING BOARDED.

IN order to execute this manœuvre, the boarder is to come within piſtol ſhot, cloſe in the wake, or, at moſt, to the weather quarter of the ſhip he means to attack; taking care to continue ſteering, ſo as not to be raked by any of the guns which belong to the quarter he ſtands on. Then, to come up with his adverſary, he muſt edge away a little, and range round aft, ſo cloſe upon the enemy's lee quarter, that his cat-head may almoſt touch her quarter gallery. Now, when you have ſhot ſufficiently a-head, your ſhip being parallel to your adverſary's, ſo as to bring your forecaſtle abreaſt of your enemy's mainmaſt, the mizen and mizen ſtayſail ſheets are to be hauled well aft, the helm put hard a-lee, and the head ſheets let fly; then, your ſhip, coming rapidly to the wind (§ 40, 50, & 31), ſhivers her ſails, and cloſes the oppoſing veſſel ſide to ſide. This manœuvre is infallible when you have the advantage of ſailing, provided very great attention is paid to it. But great attention is neceſſary; becauſe, if at this moment the weather ſhip, which wiſhes to avoid the boarding, either ſets her courſes, or lays all thoſe flat a-back which ſhe had ſet, ſhe may perchance break the grapnels if you have neglected to trim your ſails in the ſame manner as hers: for, by making more ſail, if the wind be a little freſh, ſhe will ſhoot a-head through the water, and drag the boarder with ſuch force as to break the chains or hawſers by which the two ſhips are confined together. By laying all flat to the maſt, the boarded veſſel is ſtill more likely to ſucceed, ſince the ſails of one ſhip will be full, while thoſe of the other are a-back.

This mode of boarding may, as ſhewn before, be anticipated and avoided, if the boarder does not pay the ſtricteſt attention to his own as well as to his adverſary's manœuvres: but it may be ſtill more readily avoided; if the laſt mentioned veſſel braces her head ſails ſharp a-back, ſetting only, if neceſſary, the fore ſail (§ 37), at the ſame inſtant laying to the maſt or ſhivering (according to the neceſſity for more or leſs ſternway) all thoſe which are abaft, (§ 36.) and putting the helm hard a-lee (§ 58). All this is to be executed when the boarder is ſtill about a ſhip's length (more or leſs) a-ſtern of the other veſſel. The quickneſs of this evolution, and the rapid veering of the weather ſhip, may bring the boarding veſſel, which is a little to leeward or a-ſtern of the other, into the moſt dangerous ſituation, if ſhe does not manœuvre in the ſame manner and with equal celerity; as the boarder's ſails, being full, keep up his velocity, and may, before he can veer, engage his bowſprit in the main ſhrouds of the enemy, who pays ſhort round on her head.

This terrible and dangerous ſituation is infinitely to be dreaded; and it is of the higheſt importance to pay the ſtricteſt attention to your own manœuvres, and to thoſe of your opponent, which you are to endeavour to foreſee and avoid as much as poſſible.

It is eaſy to conceive, that if you wiſh to board a ſhip, and to engage the enemy's bowſprit in your main ſhrouds, you need only get a little to windward of her, and about one or two ſhips lengths a-head, more or leſs, as (from the knowledge you have of the celerity of your ſhip's move-

ments) may be judged ſufficient; then brace ſharp a-back the head ſails, ſhiver the after ones, or lay them flat to the maſt, with the helm a-lee. This manœuvre, well executed, and covered by a briſk fire, will commonly ſucceed; but care muſt be taken not to come round too ſoon, but to range very cloſe to your adverſary; becauſe, if you ſhould not be a-head enough of him, you might fail in boarding, by paying too ſhort round, and then you would infallibly get your bowſprit foul of his fore ſhrouds, which would be highly diſadvantageous.

If you ſhould find yourſelf too far a-head, the deſign will be fruſtrated, by your paſſing under the bowſprit of the enemy, who will however be thereby expoſed to be raked at his head, if he does not manœuvre in the ſame manner and with equal ſwiftneſs as the boarding veſſel, which has the great advantage of priority.

It is abſolutely neceſſary to range very cloſe to the ſhip whoſe bowſprit you wiſh to engage in your rigging; becauſe, if you attempted to execute this at only a ſhip's length large and to windward of your opponent, he has only, the inſtant he perceives your deſign, to put the helm hard a-lee and heave in ſtays, if he does not chooſe to act in the ſame manner as you do. If this laſt method is properly executed, the two ſhips can only range very near each other and exchange their broadſides, and the lee ſhip will immediately gain the wind of her adverſary. Therefore, to execute this manœuvre well, the veſſels muſt be nearly yard-arm and yard-arm.

If the boarder be at a certain diſtance aft on the weather quarter, the ſhip wiſhing to avoid boarding muſt heave in ſtays, as ſoon as the other veſſel is in the act of veering, in order to cloſe her to leeward. By this manœuvre they will find themſelves head to head, ſo that they may fire reciprocally their broadſides, in paſſing on oppoſite directions, and the lee ſhip will get to windward.

TO BOARD WITH THE WIND LARGE.

IF two ſhips engage with the wind large, the boarding veſſel ſhould keep as cloſe as poſſible on the lee quarter of the ſhip ſhe means to attack thus, that ſhe may execute this deſign, as has been ſhewn before, by coming rapidly to the wind, and being careful not to paſs a-head of her opponent.

The weather ſhip, to avoid being boarded, muſt act on her part as was directed in the preceding article, according to circumſtances.

A ſhip may alſo be boarded on the weather ſide, by conforming to what has been ſaid of boarding to windward.

When two veſſels are engaged, with the wind right aft, the ſhip deſirous of boarding ought to drop a-ſtern of the enemy, in order to run up cloſe along-ſide of him, if the boarder has the advantage of ſailing; for, as ſhe then advances towards her adverſary, her adverſary can only endeavour to range rapidly to the wind on the other tack, as ſoon as the bowſprit of the boarder is a-breaſt of her ſtern, and thus gain the wind, in order to be in a ſituation to extricate herſelf more eaſily by a good manœuvre.

The boarding veſſel ſhould be permitted to come abreaſt of the ſtern of her adverſary, before ſhe hauls her wind; becauſe, if ſhe were to do this ſooner, the ſhip a-ſtern, at a ſmall diſtance, would board her perfectly well, even if they ſail equally ſwift, ſince the boarder would be to windward, would run large longer than the other, would range more ſlowly to the wind, and continue to ſtem

a-head of the flying ſhip. What makes this more evident is, that the boarder coming from windward preſerves longer his velo city, trimming his ſails only as the ſhip comes to the wind, and cuts the courſe of his adverſary with a line leſs curved than that deſcribed by the retreating ſhip.

If, by coming too ſoon or too faſt to the wind, the boarder choſe to abandon his deſign, he might do ſo by veering a few points on the other tack, and ſhortening ſail; ſo that the retreating ſhip will ſhew her ſtern, and the boarder can then rake her by paſſing under her ſtern.

When you attack a ſhip cloſely to leeward, you may keep away a little, when you are a-breaſt of her, ſeeming to yield under her fire. If this ſhould induce the oppoſing ſhip to veer, in order to keep you more under her guns, you have only to heave rapidly to the wind, by putting the helm a-lee, trimming all ſharp abaft, and ſuppreſſing the effect of the head ſails; all of which is to be done in the ſame inſtant you perceive the enemy bears down upon you. The quickneſs of this manœuvre, and the priority of the movement you gain thus on your enemy, will ſoon cloſe the two ſhips; and if proper attention be paid, and the diſtance well meaſured, it may happen that the enemy's bowſprit will be entangled in your fore or main rigging; which would be a moſt advantageous thing in your attempt to board. But much confidence muſt not be placed in this, as you do not frequently meet with perſons ſo eaſily duped: it may even happen that you will no longer be able to attempt the boarding, if the weather ſhip, inſtead of bearing away, plied to windward more and more; for this feint manœuvre may take you too far off to leeward of your adverſary. If you ſhould happen to be a ſhip's length to leeward, and about the ſame diſtance a-head of the veſſel with which you are engaged, you may, under cover of a heavy fire, heave in ſtays. By this manœuvre you come right athwart the enemy's hawſe, rake him fore and aft, and board him, his bowſprit being right over your gangeway: nor can he poſſibly avoid your broadſide; for, if he heave all a-back and make a-ſtern board, which is his only reſource, he may avoid being boarded, but will always be in a very bad ſituation.

BOARDING AT AN ANCHOR.

IF it be intended to board a ſhip which is at an anchor, riding head to wind, it muſt be executed under ſail; for if you cannot approach the enemy but by towing yourſelf a-head, you will never be able to board her againſt her will; ſince it will always be in her power to annoy the boats which are laying out the tow lines. It ought not therefore to be attempted, unleſs you are underway. To perform this with ſucceſs, you muſt be ſufficiently to windward to approach her by a little falling-off, without expoſing your ſtern to her fire, which ſhe could play on you with great advantage in this ſituation. Suppoſing therefore the boarder to be thus to windward, ſo as to be able to approach his opponent at anchor, the aſſailant ought to ſtop his headway, by taking a-back his mizen topſail and fore ſtay-ſail, and, when about a ſhip's length a head of the veſſel he means to board, let go an anchor; then work in ſuch a manner that, as ſoon as the mizen topſail is taken a-back, the mizen cloſe aft, the topſails clued up, and the fore topmaſt ſtayſail hauled down, he may come head to wind, and veer away cable till, by falling off, he comes board and board with his opponent, who is ſtill riding at her moorings, and who at that inſtant ought alſo to be raked by the boarder.

The boarding ſhip has no other way of manœuvering but this; becauſe, as ſoon as the anchor is gone, the ſhip acquires ſternway, and when the cable is checked ſhe comes head to wind, in which ſhe is greatly aſſiſted by the mizen and mizen topſail, which impel her ſtern to leeward (§ 40, & 44.) till the wind is right in the direction of the keel; and, as the cable is veered away till exactly along-ſide the ſhip at anchor, her own anchor being right a-head of the veſſel ſhe means to board, it follows that, as ſoon as the boarding ſhip comes head to wind, ſhe is in a proper ſituation to throw her grapnels, and ſend her crew on board of the other, if they are the ſtrongeſt.

The ſhip at anchor ſhould never wait for the enemy in that ſituation, which is always diſadvantageous, and there is always much greater probability of getting clear when underway,. But, if, for ſome unforeſeen cauſe, you are obliged to continue at anchor, you are to take advantage of the moment when the ſhip which attacks lets go her anchor, to cut the cable by which you ride. By this manœuvre you fall athwart, rake your adverſary, avoid being boarded, and bring up with your lee anchor. Beſides, if time will admit before the attack, you ſhould not neglect to caſt two ſprings out, one on each ſide of the cable by which the veſſel rides, if you have not had time before to lay out two anchors, in order not to be ſurprized, in caſe the ſhip which attacks has it in her power to paſs on either ſide of you: and, when you perceive for which ſide ſhe is determined, you heave on the ſpring which is on the ſame ſide ſhe has let go her anchor if ſhe be a-head, and on the oppoſite if ſhe be a-ſtern, veering out at the ſame time the other ſpring and cable, till you bring the aſſailant right a-breaſt of you. Then, you may rake him at pleaſure; as he has no way of getting out of this dangerous ſituation. His only courſe would be to prevent this danger, by having a ſpring alſo; and, under cover of a briſk fire, veer upon that ſpring and cable to lay his enemy handſomely on board. But if he has neglected this precaution, he muſt cut his cable, and drop on board of the ſhip to leeward; who, on the other hand, has no way to avoid being boarded, but by cutting, to get underway, or to run on ſhore.

It is always eaſy to board a ſhip at anchor, when the wind will allow you to approach her under ſail; and the beſt way to proceed, is to run her along-ſide, or to bring-to to windward of the ſhip you wiſh to attack, keeping her exactly to leeward of you; then drift on board of her, by trimming your ſails in ſuch a manner, as to keep as near as poſſible, your broadſide oppoſite to that of the adverſe ſhip. Annoying her with your guns till you can cloſe her, and your conſtant cannonading may prevent her fire being ſo well ſerved as it might otherwiſe be.

When you are underway, and purpoſe to board a veſſel moored, let go an anchor at the time of boarding: for, if the ſhip attacked ſhould at this moment cut her cables to drive on ſhore, this would prevent your running a-ground together.

NAVAL TACTICS.

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INTRODUCTION.

THE progreſſion of nautical ſcience ends at NAVAL TACTICS; a ſcience, which, however humanity may deplore the neceſſity of it, is eſſential to the protection of a maritime nation.

The art of war at ſea is limited by the poſſibilities of navigation; and it is therefore much leſs capable of that variety of ſtratagem which belongs to the hoſtility of armies. But, although the naval warrior cannot place his fleet in ambuſh, nor at all times preſs the foe in their weakeſt part, let it not be ſuppoſed that contrivance and ſurpriſe are excluded from this mode of battle. No: on the contrary, they are often the protection of inferior force, and frequently end the conteſt of equal powers. Of this too we may be aſſured, that, inaſmuch as the knowledge of what is poſſible to be accompliſhed may lead an enemy to diſcover the intention of an evolution in its very commencement; ſo much greater muſt be the talents and more acute the ingenuity of him, who can deviſe and execute an unexpected manœuvre. To do this, belongs alone to genius: it cannot be learned from books; for the moment of invention is the moment of execution.

Of what uſe then, it may be aſked, are books of naval tactics? They teach the elements of that ſcience; without a knowledge of which, no man is an officer, and no officer adequate to a command.

M. Morogues is the moſt copious author upon this ſubject, and his ſyſtem is the practice of the preſent day. Of his work, therefore, a more full tranſlation now firſt appears, with every ſubſequent improvement on the ſame baſis, correctly methodized.

But M. Bourdé de Villehuet has, in his Manœuvrier, endeavoured to ſhew that a particular order of ſailing, which he calls the order of convoy, is the beſt adapted to the purpoſes of naval arrangements. We have not therefore omitted, ſecondly, to give the ſyſtem of that gentleman.

And the Viſcount de Grenier having ſuggeſted an art of naval war, upon principles at once new, bold, and ingenious, his work will form the third diviſion of this Treatiſe.

Thus all that is known may now be found in a form more ſyſtematically digeſted than heretofore; more complete as a whole, and more diſtinct in the parts.

FLEETS.

FLEETS are generally divided into three ſquadrons; and, if numerous, theſe ſquadrons are ſubdivided into three diviſions. The ſquadrons are denominated the van, the center, and the rear; and the diviſions of each ſquadron bear the like denomination. In general, the center ſquadron is commanded by the admiral (who, indeed, directs the whole); the van by the vice-admiral; and the rear by the rear-admiral. The three ſquadrons of a fleet ought to be equal, in number and force, in order that one may be able as effectually to oppoſe the enemy as another.

The buſineſs of ſuch fleets, denominated NAVAL TACTICS, conſiſts of evolutions, which are to preſerve their own ſafety and produce injury to the enemy, in every poſſible ſituation. Nothing great can be effected without order; and therefore it is, that various diſpoſitions for fleets have been deviſed, applicable to their different objects of either protecting commerce, croſſing an ocean, or engaging an enemy. Tacticians have ſaid, that there are five orders of ſailing, one order of battle, and one order of retreat; and, as this ſyſtem ſeems moſt uſually practiſed, we ſhall, in this firſt diviſion of the ſubject, confine ourſelves to the elucidation of that ſyſtem; and ſhall hereafter give whatever deviations from it have been ſuggeſted by writers of originality and genius.

Before we enter upon diſcuſſing the different orders, it is neceſſary to be correctly underſtood with regard to what is meant by the *ſtarboard and larboard lines of bearing*, the *manœuvre in ſucceſſion*, the *line abreaſt*, and the *bow-and-quarter line*.

THE STARBOARD AND LARBOARD LINES OF BEARING

ARE the two cloſe-hauled lines, the wind being in any given point. If upon either of theſe lines a fleet be ranged, whatever courſe they ſteer, they will, by hauling their wind, or by tacking together, be found in order of battle; i. e. cloſe-hauled on either the ſtarboard or larboard tack. [Tactics, pl. I. fig. 1.] Thus, for inſtance, the ſhips on the E N E line are on the larboard line of bearing, as well as larboard tack; for it will be readily ſeen, that, if they haul their wind together, they will be in order of battle on the larboard tack. But the ſhips on the W N W line are on the ſtarboard line of bearing, though running on the larboard tack; and, when they tack together, they will be in order of battle on the ſtarboard tack. Hence we ſee, that ſhips may be on one tack, but different line of bearing; and, accordingly as they are ranged for thus readily forming the order of battle, they are ſaid to be either *In line of bearing for the ſtarboard tack*, or *In line of bearing for the larboard tack*.

TACTICS_Plate I.

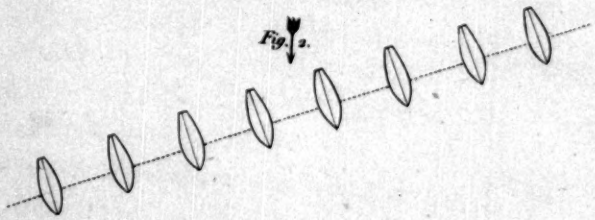
Starboard and Larboard Lines of Bearing.
Bow-and-quarter Line.

WNW. ENE.

Fig. 1.

First Order of Sailing.

Fig. 2.

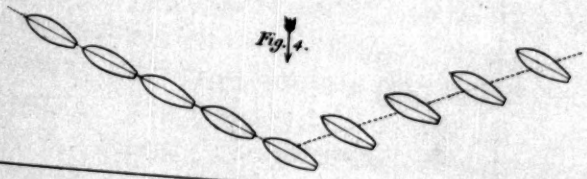


Second Order of Sailing.

Fig. 3.

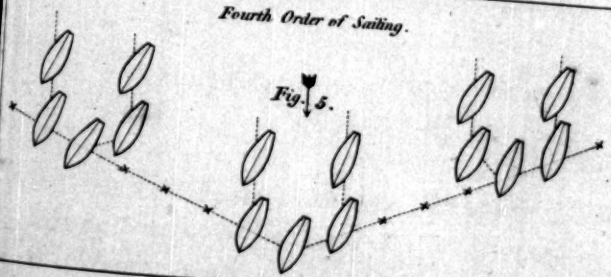
Third Order of Sailing.

Fig. 4.

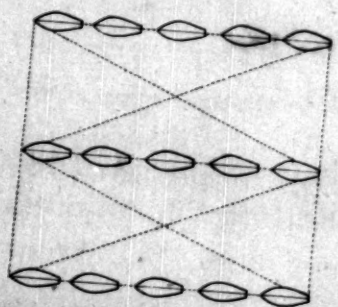


Fourth Order of Sailing.

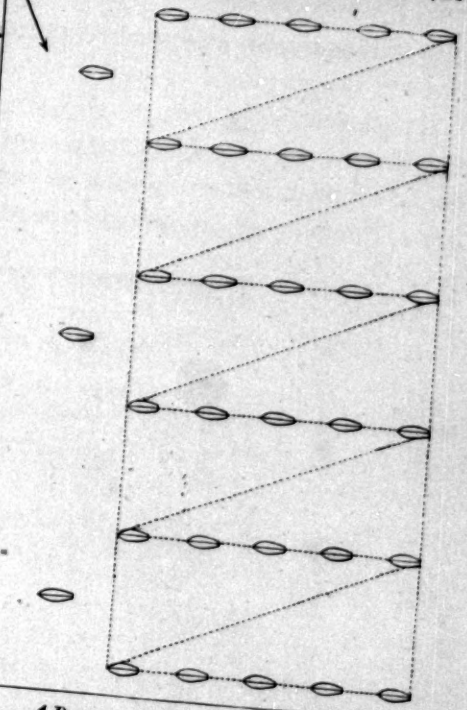
Fig. 5.



Fifth Order of Sailing_Fig. 6.

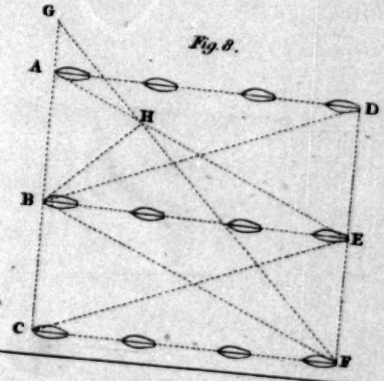


Fifth Order of Sailing for large Fleets._Fig. 7.

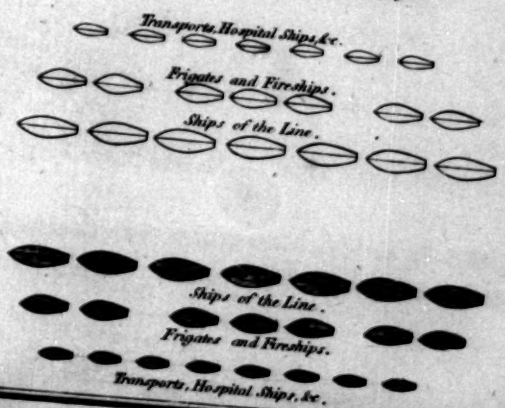


A Demonstration of the Principle for regulating the distance between the Columns in the fifth Order of Sailing.

Fig. 8.



Two Fleets in the Order of Battle_Fig. 9.



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MANŒUVRE IN SUCCESSION

IS performed by a fleet, when, ranged in one of the orders of ſailing, and ſtanding on the ſame line, the ſame manœuvre is ſucceſſively performed by every ſhip, as ſhe arrives at the wake of the van ſhip of the whole fleet (if in one line), or of the van ſhip of her particular diviſion (if divided into ſquadrons). So that a fleet tacks or veers, bears away or comes to the wind, in ſucceſſion, when all the ſhips of every line execute, one after another, the ſame manœuvre on the ſame point of the wake of the leading ſhip. In all ſucceſſive movements great attention ſhould be paid to the ſhip a-head.

THE LINE A-BREAST

IS formed when the ſhips ſides are all parallel to each other, on a line which croſſes their keels at right angles. This line is moſt commonly uſed with the wind right aft, ſo that the line forms a perpendicular with the direction of the wind.

THE BOW-AND-QUARTER LINE

IS formed by ſhips being ranged on the bow and quarter of each other. This will always be the caſe, when the whole fleet, being in order of battle, have either tacked or borne away *together*. In Tactics, pl. I. fig. 1. the ſhips on the W N W line are in bow-and-quarter line; for it is evident that, upon re-tacking, they would form in order of battle: and thoſe which are bearing away on the E N E line are likewiſe in bow-and-quarter line, and would equally form in order of battle, upon hauling their wind.

THE ORDERS OF SAILING.

THERE are five orders of ſailing. To judge which is the beſt, we ſhould conſider in which the courſe of the fleet is the leaſt impeded, and from which the order of battle can be moſt eaſily and quickly formed. Upon this principle, experience determines in favour of the fifth order, which is accordingly in moſt general practice. Of the others, however, we ſhall give explanations, ſo that correct ideas may be entertained of their relative advantages and defects; and we ſhall likewiſe explain ſuch of their manœuvres as are ever practiſed.

FIRST ORDER OF SAILING.

THE fleet is ranged on one of the lines of bearing, ſteering at the ſame time their proper courſe. [Tactics, pl. I. fig. 2.]

This order extends the fleet too much, rendering a communication between the van and rear difficult to be preſerved. When ſhips do not ſteer in the wake of each other, they cannot ſo commodiouſly

preſerve the line; and the motions of a fleet, thus extended, are rather ſlow. This form can only be of ſervice when in ſight of an enemy, for the execution of ſome particular evolutions, and for the more readily forming in order of battle.

THE SECOND ORDER OF SAILING.

THE fleet is ranged on a line perpendicular to the direction of the wind, ſteering at the ſame time their proper courſe. [Tactics, pl. I. fig. 3.]

This is by no means preferable to the firſt; becauſe, poſſeſſing all its defects, it has this additional one, that each headmoſt ſhip, in tacking, is in great danger of falling on-board her next a-ſtern, eſpecially if the line is ſomewhat cloſe.

THE THIRD ORDER OF SAILING.

THE whole fleet is ranged on the ſides of an obtuſe angle of 135 degrees, formed by two lines upon a wind, the admiral making the angular point to leeward; and thus the fleet may continue on any courſe.

This order, which is not without defects, is preferable to the other two. It collects the ſhips cloſer together, but ſtill gives too great an extent for the ſailing form of a fleet. [Tactics, pl. I. fig. 4.]

THE FOURTH ORDER OF SAILING.

THE fleet is divided into ſix columns; two for the van, two for the center, and two for the rear. [Tactics, pl. I. fig. 5.] Each commanding officer is in the middle, a-head, and to leeward, of his two columns. The commanders, ranged upon the two cloſe-hauled lines, have their ſquadrons aſtern of them, upon two lines parallel to the direction of the wind; the firſt ſhips of each column being, with reſpect to the commander of their ſquadron, the one on his ſtarboard, the other on his larboard quarter. The diſtance of the columns ſhould be ſuch as to permit the fleet to reduce itſelf eaſily to the third order of ſailing, to paſs from that to the order of battle.

The deficiency of this order would be eaſily ſeen, if the fleet were in ſight of an enemy. It requires too much time to reduce it to order of battle; a movement which ought to be executed with promptitude and facility. It is, beſides, liable to be broken in ſailing; becauſe it is difficult for the ſhips to preſerve their proper bearings with each other.

THE FIFTH ORDER OF SAILING.

THE fleet is divided into three columns, each of which is ranged on a line parallel with that cloſe-hauled line upon which they are to form the order of battle. [Tactics, pl. I. fig. 6.] Regularly, the van guard forms the weather column, commanded by the vice-admiral; the center diviſion,

commanded by the admiral, forms the center column; and the rear-guard, commanded by the rear-admiral, is the lee column. But this diſpoſition of the columns is ſometimes changed, to anſwer particular purpoſes.

Two things are principally to be obſerved, to keep this order regular; the columns and the veſſels ſhould preſerve their proper diſtances.

The commanders of each diviſion, and each ſecond, third, &c. ſhip are to keep themſelves reciprocally a-breaſt of each other; each likewiſe obſerving, with regard to her immediate leader, the diſtance preſcribed by the admiral.

The diſtance between the columns will be correct, if the firſt ſhip of one column and the laſt ſhip of the next column form an angle of 22° 30′, or two points, with the line on which they are moving.

This order is more practiſed, becauſe it unites in itſelf the advantages of all the others, without their defects. The fleet, thus collected cloſer together, can better obſerve ſignals, and is more readily changed into order of battle.

In this order, the diviſions, obſerving the ſame arrangement, may be formed in two or three columns, if the fleet be very large. [Tactics, pl. I. fig. 7.] Each chief of a diviſion will then place himſelf at a little diſtance before, in the middle, and at the head of his diviſion.

The ſhips, in this as in the other orders, may keep their proper courſe.

A PRINCIPLE FOR REGULATING THE DISTANCE OF THE COLUMNS.

TO determine what ought to be the diſtance between the columns, their length muſt be known. [Tactics, pl. I. fig. 8.] Then raiſe C G perpendicular to C F, making them equal to each other, in order to draw F G, that you may make F H = C F; and thus you will have G H as the diſtance of the columns. So that the lines A E and B F, being drawn from the rear of the weather column to the van of the leeward column A D, will be perpendicular to the direction of the wind W.

DEMONSTRATION.

SINCE the van C and the rear E are equally to windward, E C is perpendicular to the direction of the wind W; and the angle B F C = E C F, is 22°. 30′; therefore E C F is alſo the half of the angle C F G of the right-angled iſoſceles triangles C G F: therefore the triangles B H F and B C F are ſimilar and equal, and the line B C is equal to B H or H G.

COROLLARY.

IT follows, that to have the diſtance of the columns of which the length is known, the ſquare of the length of one column muſt be taken, and then doubled, in order to have the ſquare of the hypotheneuſe F G of the right-angled iſoſceles triangle G C F; then, from that ſum take the ſquare root by decimals, in order to come as near it as poſſible; and, taking from that root the length of one column, what remains ſhall be the diſtance between the columns.

Example. In the figure there are 4 ſhips in a column, at 100 fathoms diſtance from each other, and 46 fathoms are allowed for the length of each ſhip from the jib-boom end to the fly of the enſign; ſo that every column will be 484 fathoms long, the ſquare of which will be 234256, and the double 468512. The neareſt ſquare root of that is 684, from which taking 484, there will remain 200 fathoms for the diſtance requiſite between the columns.

But the following rule is, though perhaps not ſo critically accurate as the preceding, ſufficiently near for general practice, and leſs complex.

The diſtance between the columns may be found by multiplying the length of one column by 5, and dividing the product by 12. Thus, ſuppoſe the length to be 484 fathoms; that multiplied by 5 is 2420; and, divided by 12, gives 201 fathoms for the diſtance between the columns.

If the diſtance between the columns be previouſly given, the neceſſary length of them may be found in the ſame manner; by multiplying that diſtance by 12 and dividing by 5. This is only the inverſe of the preceding method.

But, when the columns are already formed, although not upon the preceding principle, their lengths and diſtance from each other may be thus found.

TO FIND THE LENGTH OF A COLUMN.

ADD together the intervals between the ſhips and lengths of all the ſhips in that column. Thus, ſuppoſe 15 ſhips in a column:

	FATHOMS.
14 Intervals at 100 fathoms each - -	1400
15 Ships at 46 fathoms each - - -	690
Length of the column.	2090

TO FIND THE DISTANCE BETWEEN THE COLUMNS.

TAKE the bearings of the leading ſhip of one column with the ſternmoſt ſhip of the next column. This may be called the angle of poſition; and, ſuppoſe it were 33°. 45′, or three points, it may be thus ſolved by trigonometry.

As the co-fine of the angle of poſition, 33°. 45′, -	Ar. Co.	0. 08015
Is to the fine of 33°. 45′, - - -	-	9. 74474
So is the length of the column (2090 fathoms) -	-	3. 32015
To the diſtance between the columns, 1396 fathoms -		3. 14504

Or it may be thus worked by the Table of Difference of Latitude and Departure. Uſe the angle of poſition, 34° nearly, as a *courſe*; the length of a column, as *Difference of Latitude*; and the diſtance between the columns will be as the *Departure*.

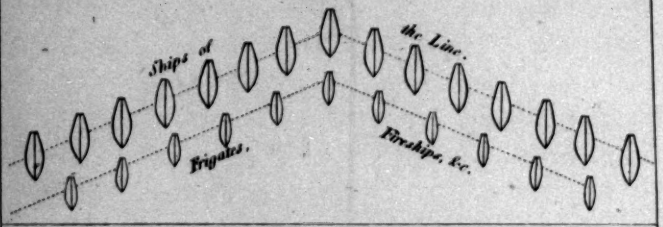
THE ORDER OF BATTLE.

IT has been found that there is no mode of preſerving order in battles at ſea, but by keeping upon a line not quite cloſe-hauled, a-head of each other, and under very moderate ſail. The diſtance between each ſhip varies, according to circumſtances, from one-third of a cable's length to about 100

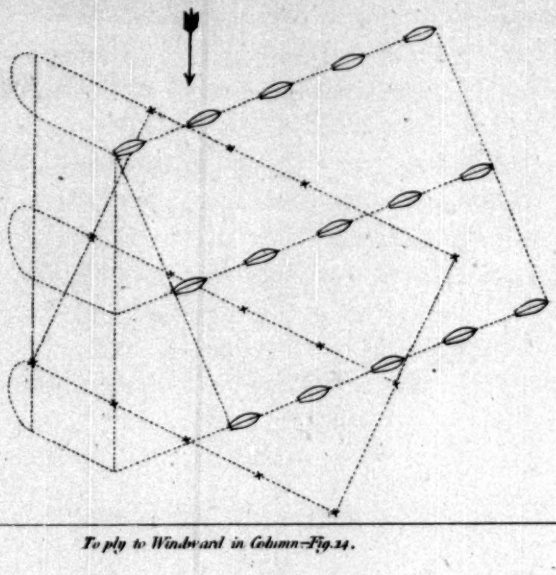
TACTICS. Plate. II.

The Order of Retreat.

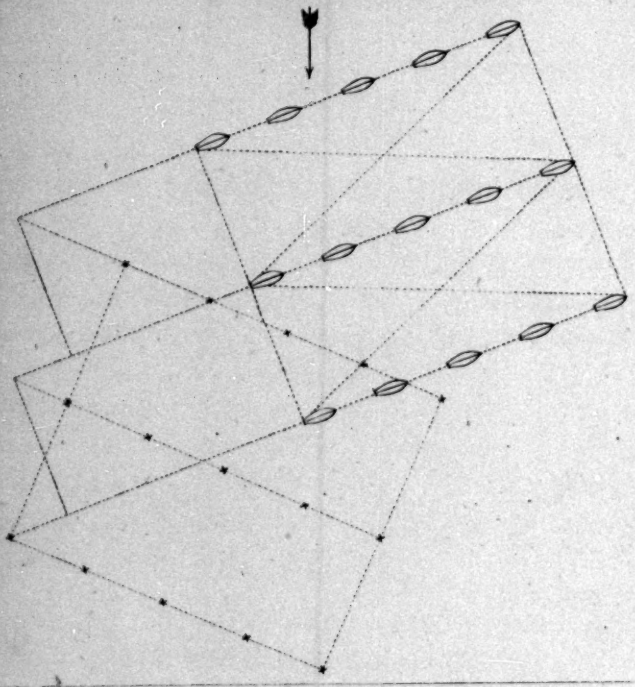
Fig. 10.



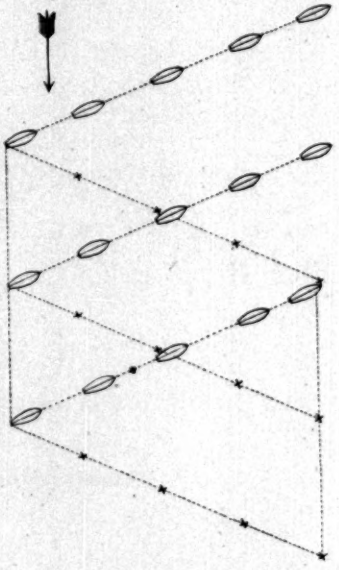
To wear the Columns in Succession.—Fig. 13.



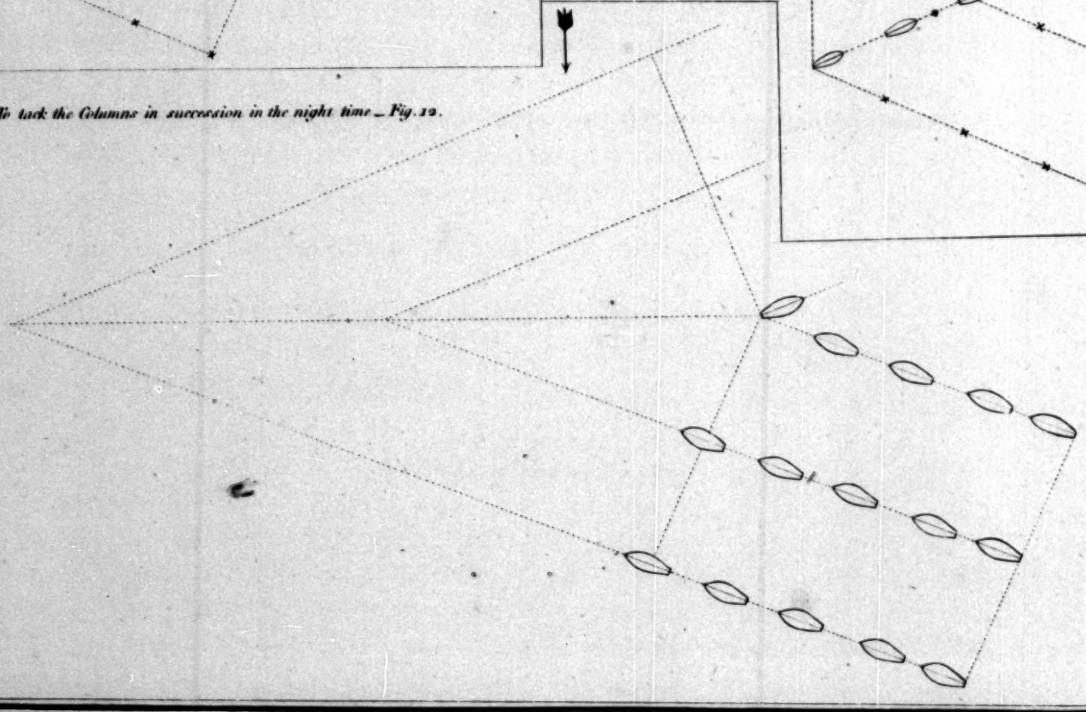
To tack the Columns in succession.—Fig. 11.



To ply to Windward in Column.—Fig. 14.



To tack the Columns in succession in the night time.—Fig. 12.



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fathoms. [Tactics, pl. I. fig. 9.] The fire ſhips muſt be diſtributed, ſome a-breaſt of the van, center, and rear, at a convenient diſtance to windward, if the enemy be to leeward; or to leeward, if the enemy be to windward; and in a line with ſome frigates a-head and a-ſtern of them. Beyond theſe a third parallel line is formed of the hoſpital ſhips, tranſports, &c. with frigates a-head and a-ſtern.

The line upon a wind is choſen for the order of battle; becauſe, if the fleet to windward were ranged on any other line, the enemy might gain the wind of it: and, if he ſhould not even ſeek to obtain that advantage, he could nevertheleſs chooſe the time and diſtance for engaging. The fleet to leeward, being ranged parallel to the enemy, can more readily avail itſelf of any ſhift of wind and overſight of the enemy to gain the wind; which, if it ſhould not accompliſh, it muſt ſtill keep on that line, extending itſelf the length of the enemy's, to prevent the being forereached, as well as to avoid engaging, if neceſſary. The van is regularly commanded by the vice-admiral, and forms the head of the line to windward; the center is commanded by the admiral; and the rear, which is commanded by the rear-admiral, cloſes the line to leeward. This diſpoſition is ſometimes altered, to ſuit the purpoſes of particular evolutions.

THE ORDER OF RETREAT.

THIS form (the inverſe of the third order of ſailing) is practiſed only in the preſence of an enemy by an inferior fleet to leeward, when, either beaten or obliged to avoid an action, it makes choice of this diſpoſition, rather than either of the orders of ſailing; becauſe from this order it can more eaſily recover the line of battle; the frigates, fire ſhips, tranſports, &c. are more completely protected; and the whole is more connectedly under the command of the admiral. [Tactics, pl. II. fig. 10.]

The fleet is ranged on the two ſides of the obtuſe angle of 135 degrees, forming two lines upon a wind. The admiral forms the angular point to windward, and in the middle of his fleet: the fire ſhips, tranſports, frigates, &c. are placed between the two wings to leeward. The courſe of a retreat is generally before the wind; but the fleet may go more or leſs large, according to the exigency of the moment.

TO FORM AND MANŒUVRE THE DIFFERENT ORDERS, WITHOUT CHANGING FROM OR INTO ANOTHER ORDER.

TO FORM THE FIFTH ORDER OF SAILING.

IF the fleet is in no preſcribed order, and it is intended to form the order of ſailing in three columns, the three leading ſhips of the diviſions are to take their poſts a-breaſt and to leeward of each other, keeping their wind under an eaſy ſail. Then the ſhips of each ſquadron, making ſail, will range themſelves in their reſpective ſtations, a-ſtern of their immediate leaders, and keep the ſame courſe as they.

TO TACK THE COLUMNS IN SUCCESSION.

THE ſhips of the lee columns having more diſtance to run before they can recover their poſition, muſt go about firſt, in ſucceſſion. When the center leader finds himſelf a-breaſt of the leader to leeward of him, or at right angles with the cloſe-hauled line on the other tack, upon which the lee leader is now moving, he tacks; and is followed in ſucceſſion by his diviſion. The weather column, paying the ſame regard to the center column, manœuvres in the ſame manner. [Tactics, pl. II. fig. 11.] In this evolution the weather column ſtill continues to windward.

Should the columns have cloſed too much during this evolution, or be too far aſunder, either of which may happen from the inequality of ſhips ſailing, the order may be recovered either by the lee or windward column bearing away ſo as to make an angle of 22°. 30′, or two points, between the ſternmoſt ſhip of the weather column and the leader of the lee column.

If this evolution is to be executed in the night, the *weather* column muſt tack firſt; [Tactics, pl. II. fig. 12.] and, in order to prevent the riſk of one column paſſing through the rear of the other columns, the next column muſt not tack till its leader is ſenſible that many ſhips of the columns immediately to windward are about. When about, the leaders make little ſail, while their followers make ſucceſſively a little more, in order to form their reſpective columns. But the columns which are firſt completely about, ſhould either bring-to, and wait for the next, or ſhould juſt keep ſteerage way. Thus the former weather column ſhould wait for the center; and they both ſhould then wait the arrival of the former lee column. In this evolution, it is to be obſerved, that the columns which were to windward are now to leeward.

As ſome riſk may attend the execution of this at night, it is moſt adviſable to tack the columns together, and ſail in bow-and-quarter line; becauſe, if it became neceſſary to re-tack, or if the wind were to change before the completion of this evolution, much confuſion might enſue. By tacking together this would be avoided.

TO VEER THE COLUMNS IN SUCCESSION.

THE leader of the lee column [Tactics, pl. II. fig. 13.] veers round, and ſteers four points free upon the other tack, followed by the ſhips of that diviſion; and, when he is clear of the ſternmoſt ſhip of his diviſion, he hauls up. The center and weather columns perform ſucceſſively the ſame evolution, obſerving to continue ſtanding on till they ſucceſſively bring the point, at which the lee column began to veer, to bear in a right line to leeward of them. They likewiſe ſucceſſively ſpring their luffs, when the point, at which the lee column hauled their wind, bears right to leeward.

Each column having the ſame diſtance to run, if the evolution be well executed, the leaders of the windward columns will find themſelves, when they ſpring their luffs, exactly a-breaſt of the leader of the lee column, and ſo will all the other ſhips. But the making or ſhortening ſail will, at all events, rectify the inequality of ſailing.

TO TACK THE COLUMNS TOGETHER.

THIS evolution cannot be performed ſafely by all the ſhips *at the ſame inſtant;* nor yet is it neceſſary that one ſhip ſhould finiſh going about, before her next puts in ſtays. But the ſternmoſt ſhips of

the three columns put in ſtays together; and, when they are obſerved to be ſo, their ſeconds a-head immediately put their helm down; and ſo on through the whole fleet. Each column will then be in bow-and-quarter line.

TO PLY TO WINDWARD IN COLUMN.

THIS is beſt executed when the ſhips of the columns coincide with each other in the direction of the wind, [Tactics, pl. II. fig. 14.] and the evolution is thus performed. The three van ſhips of the columns tack at the ſame time; and the reſt perform ſucceſſively the ſame manœuvre at the ſame point in the wake of their leaders a-head; ſo that there will be always three ſhips at the ſame inſtant in the act of going about.

The van ſhips of the lee columns, being exactly in the direction of the wind with the leading veſſel of the weather column, it will be found, (if the diſtance between the columns be regulated by the principle before laid down,) that the van of the lee columns, now on the other tack, will never croſs or interſect the rear of the weather file as it advances to tack. When the van of the lee column, after having got upon the other tack, finds the center ſhip of the weather column to bear about half a point to windward of her, the fleet will be tolerably well poſted for working to windward in ſucceſſion. When all the columns have got on the other tack, the order will ſtill be preſerved.

TO INTERCHANGE THE CENTER AND WEATHER COLUMNS.

THE weather and lee columns lie-to, or at moſt keep ſteerage way. [Tactics, pl. III. fig. 15.] The center column tacks together; and, forming a bow-and-quarter line, goes cloſe-hauled to gain the wake of the weather column; it then re-tacks together, and ſtands on; while the weather column bears away to its new ſtation in the center, and the lee column fills.

TO INTERCHANGE THE WEATHER AND LEE COLUMNS.

THE center column braces-to. [Tactics, pl. III. fig. 16.] The lee column ſtands on with a preſs of ſail; and, when its ſternmoſt ſhip can paſs to windward of the van of the center column, (which will be when the center ſhip of the lee column is on a line, perpendicular to the direction of the wind, with the van of the center column,) the lee column tacks together, and ſtands on cloſe-hauled till it comes on a line with the center column, when it goes large two points to get in the ſtation of the late weather column; and then veers together, hauling the wind on the other tack. At the beginning, however, of this evolution, the weather column bears away together under little ſail, and goes large ſix points on the other tack, ſo as to get into the wake of the center column. It then hauls to the former tack, going two points large, till it ranges up a-breaſt of the center column, when it braces-to, waiting for the new weather column.

TO INTERCHANGE THE CENTER AND LEE COLUMNS.

THE center and weather ſquadrons brace-to, or keep ſteerage-way, whichever is moſt convenient. [Tactics, pl. III. fig. 17.] The lee column tacks together, and preſſes ſail, to gain the wake of the center column; which when they have effected, they re-tack together, and ſtand on. Then the center edges away under an eaſy ſail, (ſteering, if it lay-to, eight points from the wind, and, if it kept ſteerage-way, only two points,) till it comes into the ſtation of the lee column, where it hauls to the wind; while the weather column fills and ſtands on; and the order is re-eſtabliſhed by ſhortening or making ſail where requiſite.

THE WEATHER COLUMN TO PASS TO LEEWARD.

THE weather column ſtands on under very little ſail, while the center and lee columns tack together, and carry a preſs of ſail till they reach the wake of the weather column; [Tactics, pl. III. fig. 18.] when they re-tack, and crowd ſail till they come up with the weather column; which, having (when they gained its wake) borne away two points, gains its ſtation to leeward, and either hauls to the wind, or braces-to till the new weather and center columns come up.

THE LEE COLUMN TO PASS TO WINDWARD.

THE weather and center columns brace-to, while that to leeward carries ſail, [Tactics, pl. III. fig. 19.] and tacks in ſucceſſion, as ſoon as the leading ſhip can weather the headmoſt ſhip of the weather column; and, when arrived upon the line on which the weather column is formed, re-tacks in ſucceſſion, forms on the ſame line, and either braces-to or ſtands on under very little ſail. If it braces-to, the two other columns bear away together two points, to put themſelves a-breaſt of the column now to windward. If, however, the new weather column ſhould ſtand on under eaſy ſail, they need go large only one point to gain their proper ſtations.

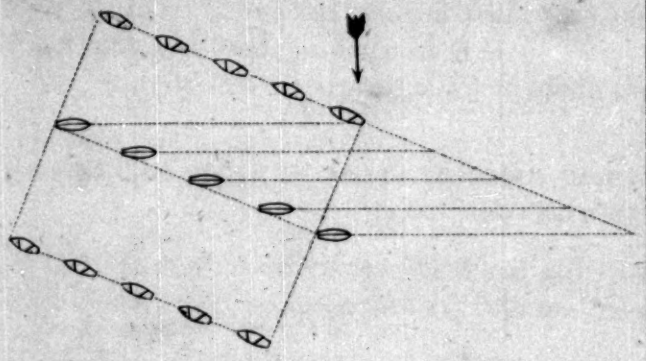
PRACTICAL METHODS OF KEEPING SHIPS IN THEIR RESPECTIVE STATIONS IN THE FIFTH ORDER OF SAILING, BY MEANS OF THE NAVAL SQUARE.

THE attention of the commanding officer of every ſhip is neceſſarily drawn to the preſerving his ſhip in the ſtation allotted to her, in whatſoever order the fleet may ſail. This is greatly facilitated by a figure drawn on the quarter deck, which is called the NAVAL SQUARE, of which the conſtruction is here explained.

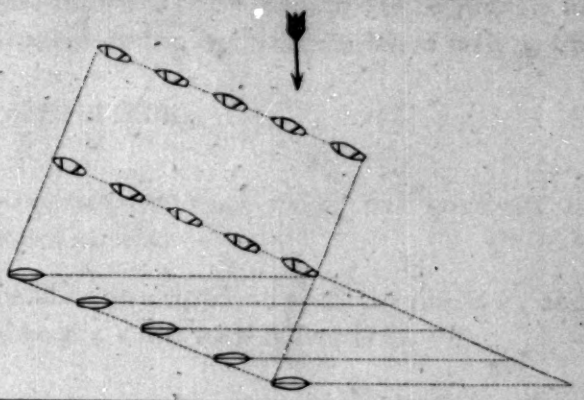
Let the ſquare A B C D [Tactics, pl. IV. fig. 20.] be drawn upon the middle of the quarter deck; let the line E F be drawn in the direction of the keel, and draw alſo the two diagonals A C and D B. Now it will be found, that the angles D G E and C G E are each 135°, or 12 points, equal to the two courſes cloſe-hauled on a wind. Draw, therefore, the lines G H and G I, dividing theſe two angles in half; and thoſe lines muſt ſhew the direction of the wind, when cloſe-hauled, upon either tack. If

TACTICS.—Plate. III.

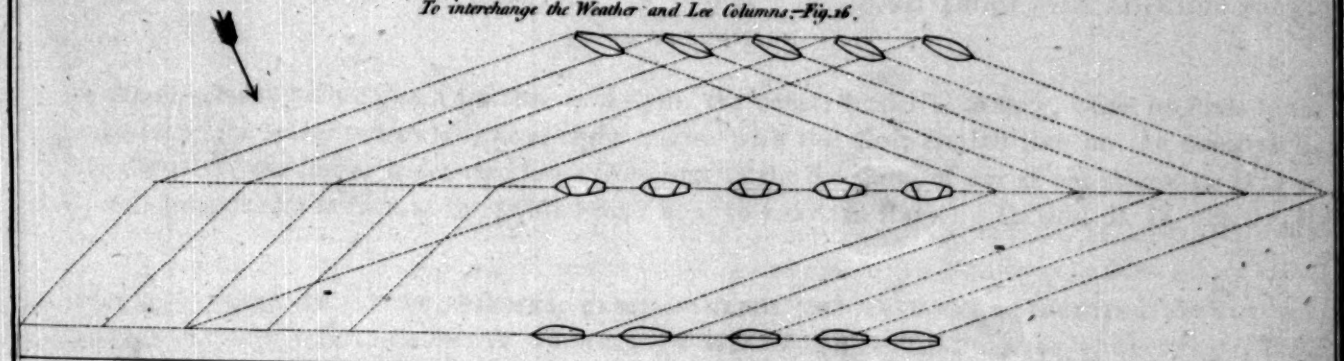
To interchange the Centre and Weather Columns.—Fig. 15.



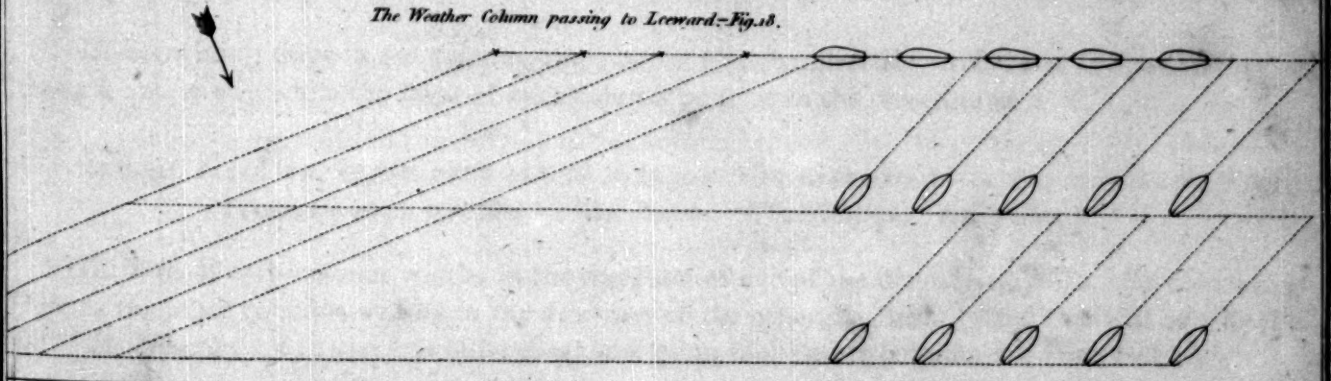
To interchange the Centre and Lee Columns.—Fig. 17.



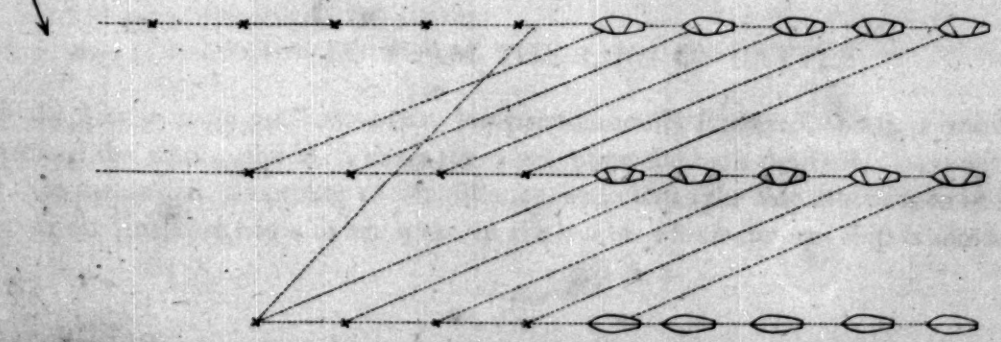
To interchange the Weather and Lee Columns.—Fig. 16.



The Weather Column passing to Leeward.—Fig. 18.



The Lee Column passing to Windward.—Fig. 19.



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therefore, a ſhip is running in the direction F E upon the ſtarboard tack, her cloſe-hauled courſe upon the larboard tack will be in the direction of the ſemi-diagonal G C. And, if ſhe be running in the direction of F E upon the larboard tack, her cloſe-hauled courſe upon the ſtarboard tack will be in the direction of the ſemi-diagonal G D.

But, to apply this more particularly to uſe in the order of ſailing,

SUPPOSE THE FLEET IN THREE COLUMNS, CLOSE-HAULED ON EITHER TACK, THE COLUMNS BEING A-BREAST OF EACH OTHER.

THE ſeconds of each ſhip a-head and a-ſtern ſhould be in a direction with the line E F; and the ſhips that are to coincide in the next columns ſhould bear in a line with A B or D G. But,

SUPPOSE THE FLEET, FROM THAT POSITION, IN THE ACT OF GOING ABOUT, THE COLUMNS TACKING IN SUCCESSION.

IN the directions before given for this evolution, the center leader is to tack, when he finds himſelf a-breaſt of the leader to leeward, or at right angles with the cloſe-hauled line on the other tack. When, therefore, the leader to leeward bears from him in the direction of one of the diagonals B D or A C, the center leader is then at the point where he is to heave in ſtays. [Tactics, pl. II. fig. 11.]

SUPPOSE THE FLEET IN THREE COLUMNS, CLOSE-HAULED; THE COLUMNS COINCIDING IN THE DIRECTION OF THE WIND, IN ORDER TO BEAT TO WINDWARD WITH GREATER FACILITY. [Tactics, pl. IV. fig. 21.]

THE coinciding ſhips in the columns muſt be kept in the direction of G H or G I, according to the tack and wind; while the ſhips of each column muſt be in the direction of E F.

SUPPOSE THE FLEET IN THREE COLUMNS IN ONE OF THE LINES OF BEARING, THE SHIPS BEING CLOSE-HAULED ON THE OTHER TACK. [Tactics, pl. IV. fig. 22.]

THE ſhips of each column will be in the direction of one of the diagonals; while the coinciding ſhips in the other columns will be in the direction of the other diagonal. And this will equally be ſo, if the columns are in one line of bearing, and going four points large on the ſame tack.

TO FORM THE LINE OF BATTLE.

IF the fleet is in no previous order, but promiſcuouſly ſcattered, the ſhip which is to lead runs to leeward of the whole, and then hauls the wind, upon the tack directed, carrying an eaſy ſail. Each ſhip then makes ſail, according to her diſtance, and chaſes the ſhip which is to be immediately a-head of her in the line, and hauls in her wake, in the line on which the van ſhip is moving.

Each ſhip muſt carefully preſerve the diſtance preſcribed; but, ſhould any of the fleet be ſo far removed from her ſecond a-head as not to be able to chace her, without going out of her way to the line, ſhe may then take her ſtation diſcretionally in a line with the leaders, leaving a proper interval.

BEING IN LINE OF BATTLE, TO FORM THE LINE ON THE OTHER TACK, WITHOUT TACKING IN SUCCESSION.

THIS is performed by all the ſhips of the line veering together: the rear ſhip hauls her wind on the other tack and ſtands on, while all the others go two points free on the other tack, and haul up, as they ſucceſſively gain the wake of the leading ſhip. Thus the rear of the line becomes the van. [Tactics, pl. IV. fig. 23.]

THE LINE TO TACK IN SUCCESSION.

EITHER the headmoſt ſhip, which is going to heave in ſtays, ſhould make a little more ſail, or the ſhip which is next to tack in her wake ſhould ſhorten ſail a little, to increaſe the interval; for it often happens that one or two hundred fathoms are run over before the ſhip a-head has been able to fill her ſails on the other tack. The exact moment when each ſhip ſhould put her helm down, is when ſhe opens the weather quarter of the ſhip ſhe follows, and which has juſt got on the other tack. Such ſhips as have already performed the evolution muſt ſhorten ſail, that the reſt may come up, and cloſe the line with the greateſt expedition.

If a ſhip miſſes ſtays, ſhe is immediately to fill again on the ſame tack, and make ſail with all poſſible diſpatch, taking care to keep as cloſe as poſſible to the wind, and not to fall off to leeward. Thus ſhe will get a-head and to windward of thoſe which follow her; and they will perform ſucceſſively their evolutions in the wake of the ſhips which are already on the other tack, only ſtanding on a little further than they would have done, if the ſhip a-head had not miſſed ſtays. The ſhip that miſſed ſtays will return ſooner to her ſtation by making all poſſible ſail to windward of the line.

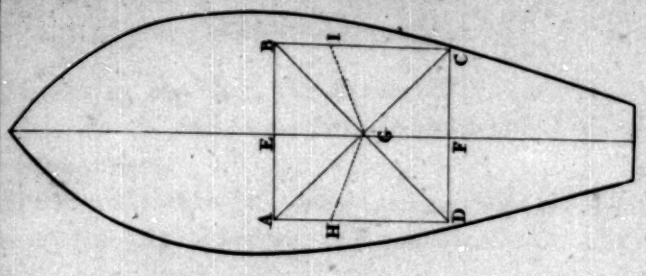
THE LINE TO VEER IN SUCCESSION.

THE van ſhip of the line veers round, and ſteers four points free upon the other tack; [Tactics, pl. IV. fig. 24.] and, when ſhe is clear of the rear ſhip of the line, ſhe ſprings her luff, and gets cloſe-hauled. The reſt follow, and haul in ſucceſſion.

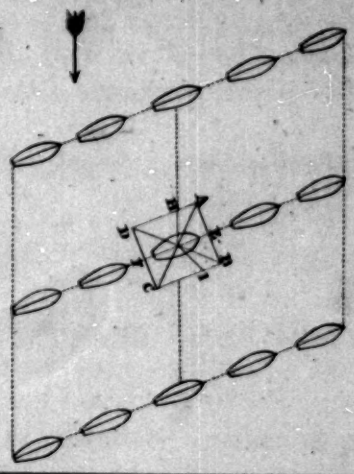
It is adviſable, whenever it is neceſſary to ſpring your luff, not to give too much of the lee-helm, leſt the ſhip ſhould fly up too quick, and ſo be thrown a-ſtern. But, for greater caution in ſhips that gripe, eaſe off the mizen ſheet; and, when the ſails are trimmed and the ſhip under ſteering-command, haul aft the ſheet again; but do not ſteer too near the wind.

TACTICS.—Plate.IV.

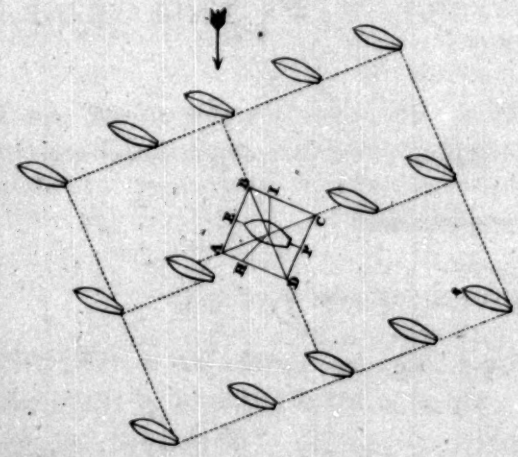
The Naval Square.—Fig. 20.



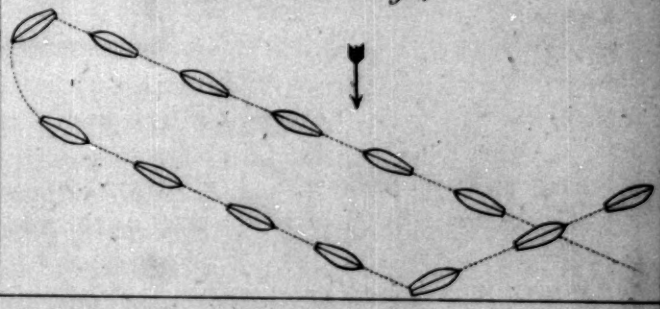
Use of the Naval Square, when the Columns coincide in the direction of the Wind. Fig. 21.



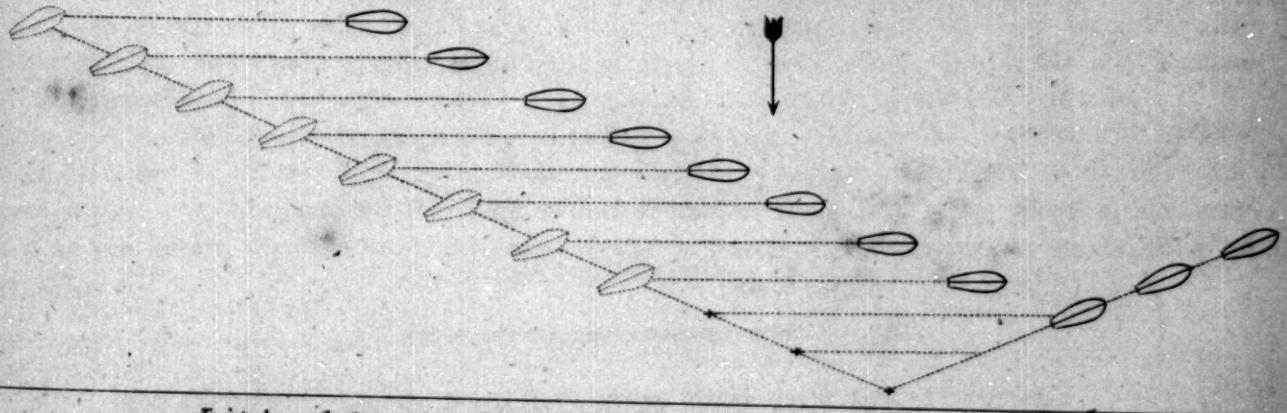
Use of the Naval Square, when the Columns are on one tack, and in a different line of Bearing.—Fig. 22.



The Line to veer in Succession.—Fig. 24.

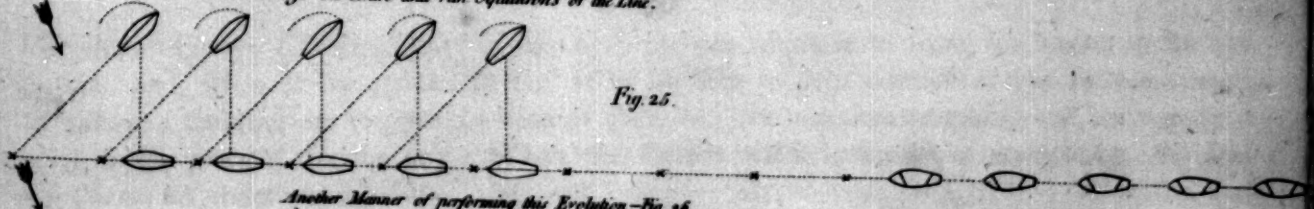


The Fleet being in Line of Battle, or in line of Bearing for it, on one tack, to form the line on the other Tack, without tacking in succession.—Fig. 23.



To interchange the Centre and Van Squadrons of the Line.

Fig. 25.



Another Manner of performing this Evolution.—Fig. 26.

THE LINE TO TACK AND RE-TACK TOGETHER.

IN tacking together, the ſternmoſt ſhip of the line puts in ſtays; then her ſecond a-head puts her helm down; and ſo on through the whole line, to prevent the ſhips a-head from falling on-board the ſhips a-ſtern.

The fleet will then be in bow-and-quarter line; from which, if tacking together, no ſhip muſt put in ſtays till the ſhip on her weather quarter is in the act of tacking.

THE LINE TO BEAR AWAY TOGETHER, PRESERVING THEIR BEARINGS FOR THE LINE.

THE rear begins this evolution; the ſternmoſt ſhip bearing away firſt the number of points propoſed; and ſo on, as quick as poſſible, to prevent falling on-board of each other.

TO PLY TO WINDWARD IN LINE OF BATTLE.

ALTHOUGH a large fleet cannot gain much by plying to windward, it is often neceſſary to be done; nor can it be ſo well effected as in line of battle, for it can tack and re-tack, all together or in ſucceſſion, according to the exigency of circumſtances. For example, if a fleet be turning to windward between two ſhores, the wind blowing right through the ſtrait, it can ſtand on one tack only to a certain point, if the fleet tacks together; for the ſhips to leeward would ſoon find themſelves cloſe to the ſhore on one tack, while the ſhips to windward would experience the ſame inconvenience on the next tack; and thus a number of ſhort tacks would be occaſioned. But, if the fleet were to go about in ſucceſſion, it will make longer boards, gain more to windward, and loſe leſs time.

If the fleet have ſea-room, or be turning on a coaſt with the wind parallel to the land, they will gain much more by all the ſhips going about together, by which the ſhips will be on one tack in bow-and-quarter line, and on the other in line of battle. Each ſhip going about at the ſame inſtant as the others, the fleet muſt get to windward as much as if a ſingle ſhip was turning to windward.

TO INTERCHANGE THE CENTER AND VAN SQUADRONS.

THE rear brings-to; [Tactics, pl. IV. fig. 25.] the van which is to form the center tacks and preſſes ſail; and, when it has gained ſo far as to be ſhip to ſhip a-breaſt of the former center, (which has been ſtanding-on, to gain the head of the line,) the van then re-tacks, and bears away a little to gain the wake of the new van. When the former van is in the act of re-tacking, the rear fills and ſtands on under an eaſy ſail.

But this evolution will be more quickly executed thus: [Tactics, pl. IV. fig.26.] the van ſquadron bears away a little, and braces-to the main topſail; the center paſſes on to windward, edging away a little, to get a-head of the former van on the ſame line. The rear, coming on under an eaſy ſail, edges away likewiſe, to obtain the wake of the new center ſquadron.

TO INTERCHANGE THE CENTER AND REAR SQUADRONS.

THE van brings-to, or juſt keeps ſteerage way. [Tactics, pl. V. fig. 27.] The center tacks and preſſes ſail; and the rear ſtands on. When the center finds itſelf ſhip to ſhip a-breaſt of the new center, it either re-tacks or bears away, to take its ſtation as rear. When the new center is come up, the van, if it brought to, fills and ſtands on.

But, if circumſtances will not allow the center to tack; ſuch as, if the fleet be in preſence of an enemy to windward, or if no inconvenience will reſult from falling a little to leeward; the evolution may be quickly executed thus: [Tactics, pl. V. fig. 28.] The van ſtands on under eaſy ſail, while the center bears away a little and braces-to, and the rear crowds ſail to paſs the center to windward, and get into the wake of the van. The van and center then edge away to gain the line with the new rear ſquadron, which then fills.

TO INTERCHANGE THE VAN AND REAR SQUADRONS.

THE van and center ſquadrons tack together, [Tactics, pl. V. fig. 29.] the van preſſing ſail: the rear ſtands on under an eaſy ſail. When the center comes to be a-breaſt of the rear, it re-tacks together, and edges away into the wake of the new van; and when the former van finds itſelf a-breaſt of the center, it re-tacks together, and bears away into the rear of the line.

This evolution may be likewiſe executed thus: [Tactics, pl. V. fig. 30.] the van and center ſquadrons bear away a little, and brace-to; the van obſerving to bear away more to leeward than the center. The rear ſtands on to gain the head of the line; when the rear is come a-breaſt of the former van, the center fills; and, both ſtanding on, form a-head of the new rear, by edging down upon the ſame line with it. By theſe means the fleet will fall more to leeward than in the following method.

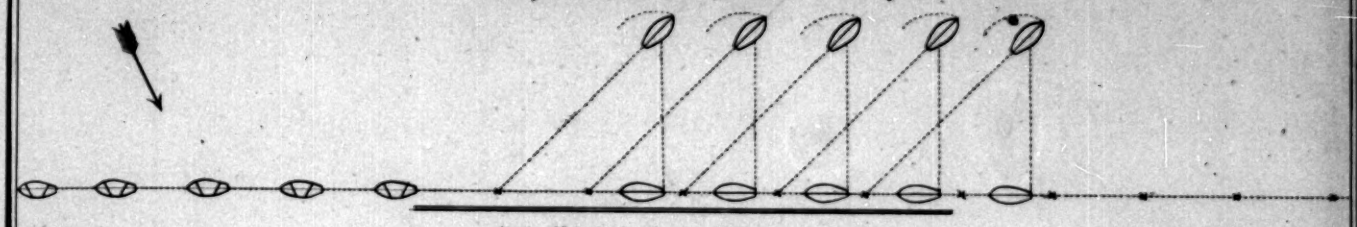
The center ſquadron edges away, and then braces-to; [Tactics, pl. V. fig. 31.] the van, at ſame time, tacks together; and the rear makes ſail to gain the van of the fleet, and forms on the line with the center. The center then fills; and the former van ſquadron, when a-breaſt of the center, veers to form the rear of the line.

THE VAN TO PASS AND FORM THE REAR.

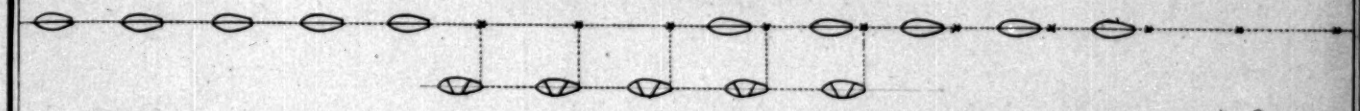
THE center and rear move on; [Tactics, pl. V. fig. 32.] the van tacks together, and runs two points free, till it finds itſelf a-breaſt of the former rear. It then re-tacks together, bears away into the rear of the line, and hauls the wind. All the ſquadrons ſhould carry a preſs of ſail; but the van, which has to tack twice, ſhould carry moſt.

TACTICS.—Plate V.

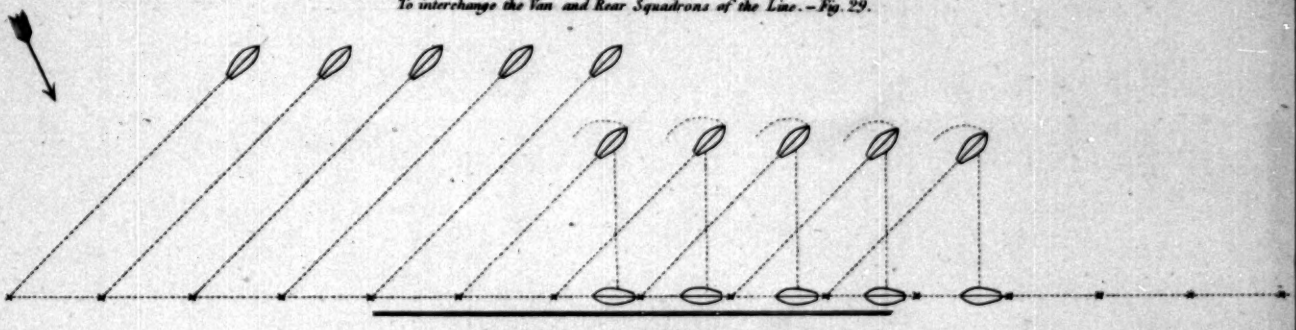
To interchange the Centre and Rear Squadrons of the Line.—Fig. 27.



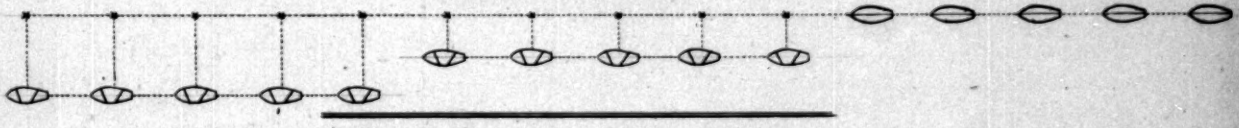
Another Method of performing this Evolution.—Fig. 28.



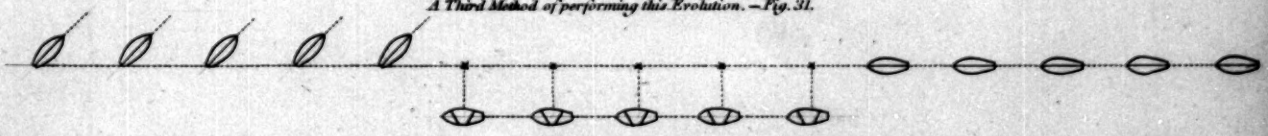
To interchange the Van and Rear Squadrons of the Line.—Fig. 29.



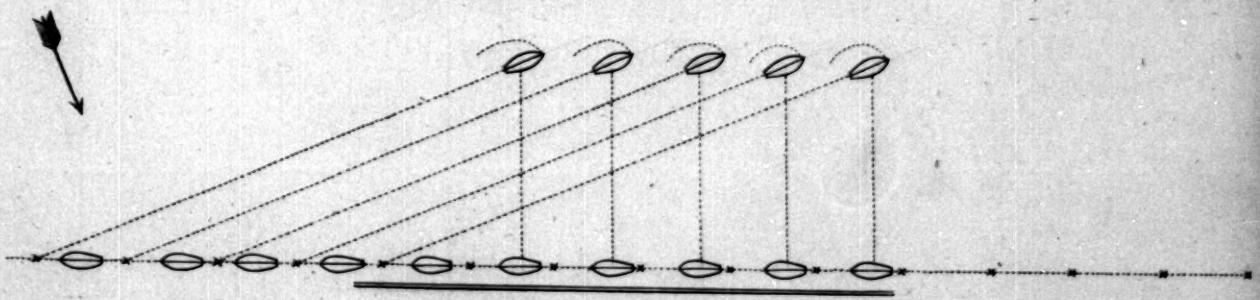
A Second Method of performing this Evolution.—Fig. 30.



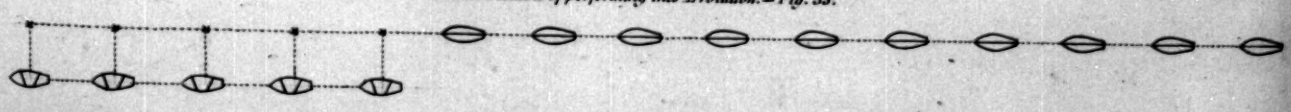
A Third Method of performing this Evolution.—Fig. 31.



The Van Squadron to pass, and form the Rear of the Line.—Fig. 32.



Another Method of performing this Evolution.—Fig. 33.



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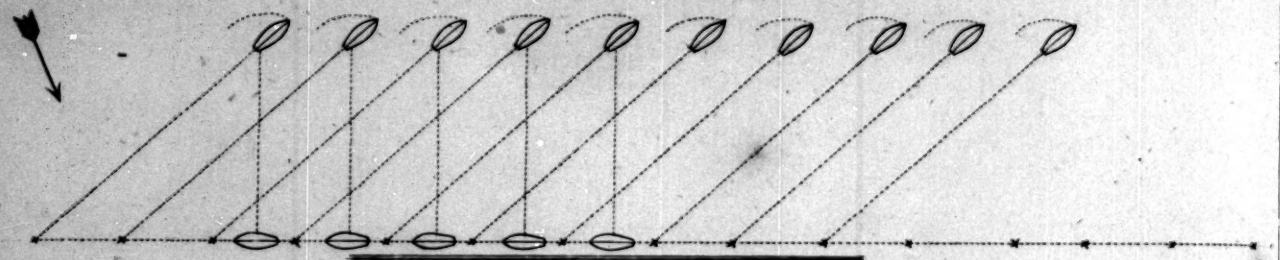
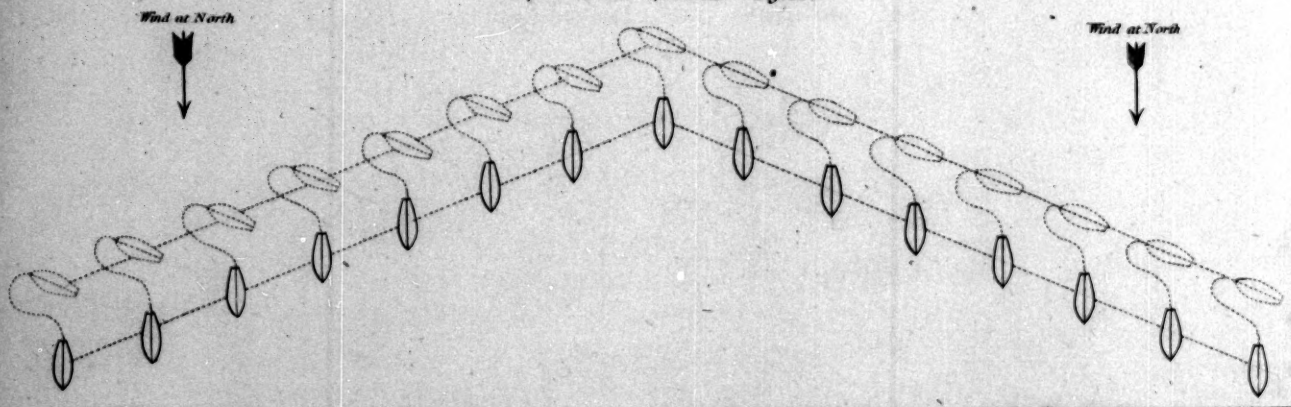
TACTICS. Plate VI.

The Rear Squadron to pass, and form the Van of the Line. — Fig. 34.

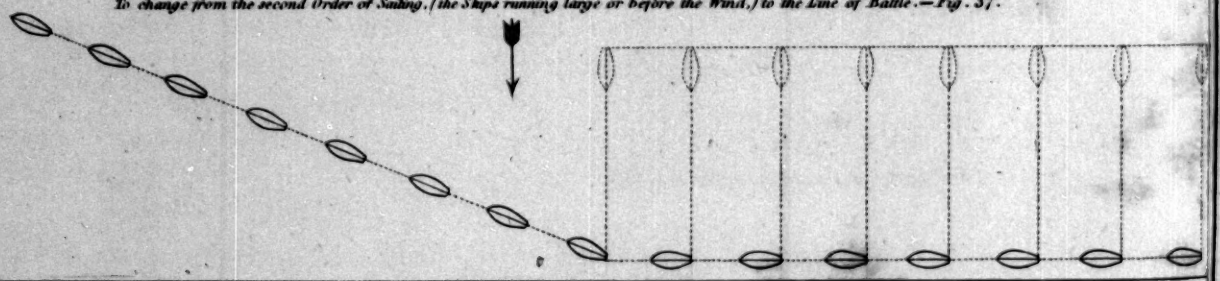


Another Method of performing this Evolution. — Fig. 35.

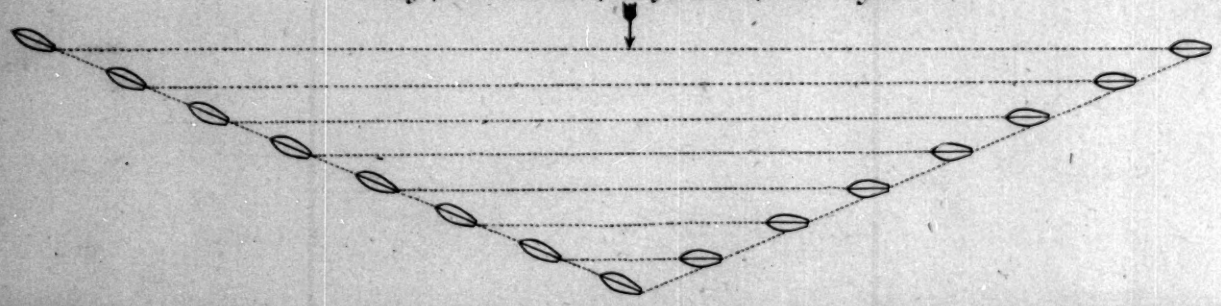
To form the Order of Retreat. — Fig. 36.



To change from the second Order of Sailing, (the Ships running large or before the Wind,) to the Line of Battle. — Fig. 37.



To change from the Third Order of Sailing to the Line of Battle. — Fig. 38.



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But the more ready way to perform this is the following. [Tactics, pl. V. fig. 33.] The van ſquadron edges a little away, and braces-to; the other two ſquadrons, crowding ſail, ſtand on till they get a-head of the new rear; and then edge away a little, to form on the line; after which the rear fills.

THE REAR TO PASS AND FORM THE VAN.

THE van and center ſquadrons tack together; the rear ſtands on, preſſing ſail. [Tactics, pl. VI. fig. 34.] When the former van finds itſelf ſhip to ſhip a-breaſt of the former rear, the van and center re-tack together; and, while they bear away for the rear of the line, the new van ſhortens ſail.

A ſecond method, more expeditious, is this: [Tactics, pl. VI. fig. 35.] The van and center bear away a little and brace-to; the rear makes ſail, paſſes a-head of both, and then edges away to form on the ſame line.

TO FORM THE ORDER OF RETREAT.

IF the fleet be promiſcuouſly ſcattered, the order of retreat is formed in the following manner.

The admiral, or the ſhip he appoints to make the angular point, runs to leeward and brings-to. The reſt, as they are deſtined in the line, run to take their ſtations to leeward, taking care to preſerve themſelves in their reſpective lines of bearing. For example: [Tactics, pl. VI. fig. 36.] the wind being N, the admiral brings-to W N W, ſtarboard tack. The ſhips of one wing will form on his larboard bow, with their main maſts bearing W S W and E N E; and the ſhips of the other wing will bring-to a-ſtern of the angular ſhip, with their main maſts bearing W N W and E S E. When the fleet bears away before the wind, the ſhips will find themſelves two points before each other's beams, ready to form for either tack; for the ſhips on the admiral's ſtarboard bow will be in the line of bearing for the larboard tack, while thoſe on his larboard bow will be in line of bearing for the ſtarboard tack.

TO CHANGE FROM ONE ORDER TO ANOTHER.

TO CHANGE FROM THE FIRST ORDER OF SAILING, (THE SHIPS BEING CLOSE-HAULED,) TO THE LINE OF BATTLE ON THE OTHER TACK.

THIS is effected by all tacking together; but it muſt be obſerved, that no ſhip is to put in ſtays till the ſhip on her weather quarter is in the act of tacking.

TO CHANGE FROM THE FIRST ORDER OF SAILING, (THE SHIPS RUNNING LARGE,) TO THE LINE OF BATTLE ON THE SAME TACK.

ALL the ſhips ſpring their luffs together, or at leaſt *immediately* after the ſhip next to windward.

TO CHANGE FROM THE FIRST ORDER OF SAILING, (THE SHIPS BEING IN BEARING FOR ONE TACK, AND RUNNING CLOSE-HAULED ON THE OTHER,) TO THE LINE OF BATTLE, WITHOUT CHANGING THE TACK.

THE laſt ſhip of the rear, which by this evolution will become the firſt of the van, ſtands-on, preſſing ſail; [Tactics, pl. IV. fig. 23.] while the reſt, in ſucceſſion, ſteer for the main maſts of their reſpective leaders, or merely bear away two points, and they will fall into the wake of the veſſels a-head; when they haul up, and make ſail accordingly.

TO CHANGE FROM THE SECOND ORDER OF SAILING, (THE SHIPS RUNNING LARGE OR BEFORE THE WIND,) TO THE LINE OF BATTLE.

ALL the ſhips of the fleet haul up together on the tack directed, [Tactics, pl. VI. fig. 37.] preſenting their heads on the line upon which they are ranged. The leading ſhip then hauls her wind, and is followed in ſucceſſion by the reſt. To prevent the ſhips being too near each other, the ſhips make ſail as they haul their wind; or their ſeconds a-ſtern ſhorten ſail, to open the order.

If a fleet were ranged upon any other line, whatever, than that which is peculiar to the ſecond order of ſailing, theſe directions would equally apply for forming the line therefrom.

TO CHANGE FROM THE THIRD ORDER OF SAILING, (THE SHIPS RUNNING LARGE OR BEFORE THE WIND,) TO THE LINE OF BATTLE.

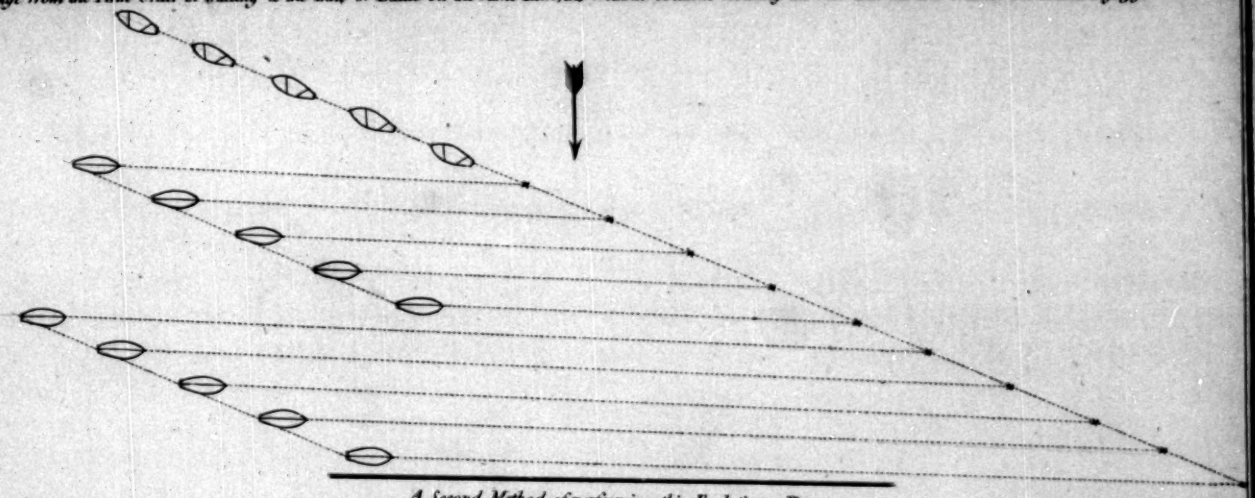
THE angular ſhip and that wing of the fleet, which is in bearing for the tack on which the line is to be formed, ſpring their luffs together, and ſtand-on. [Tactics, pl. VI. fig. 38.] The ſhips of the other wing haul up together; move on perpendicular to the wind; and form in each other's wake, when they haul up for the line.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE SAME TACK, THE WEATHER COLUMN FORMING THE VAN, AND THE LEE COLUMN THE REAR.

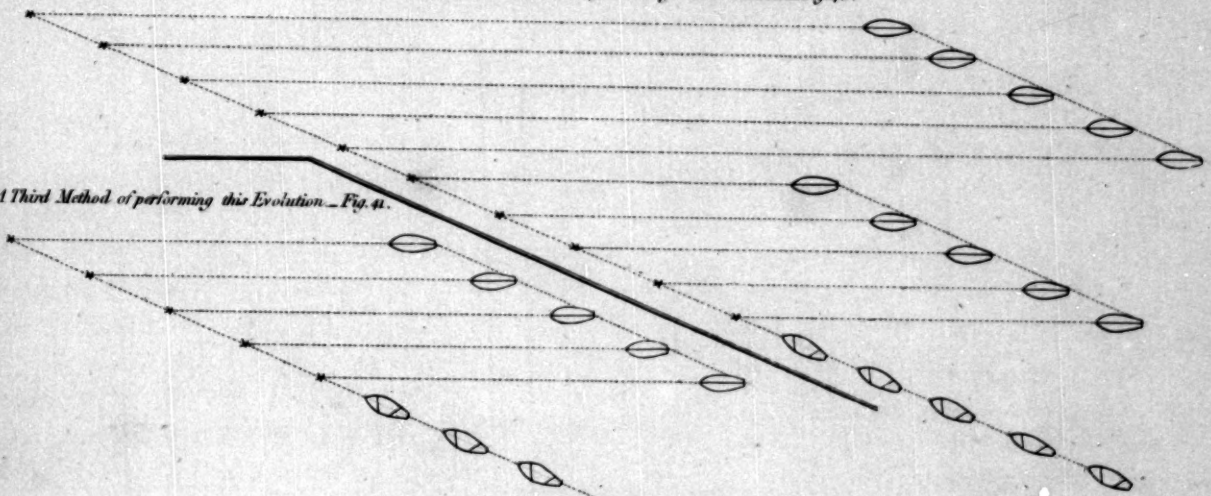
THE weather column brings-to; [Tactics, pl. VII. fig. 39.] the center and lee columns tack together, and go away two points free. When the center column has gained the wake of the van,

TACTICS.—Plate VII.

To change from the Fifth Order of Sailing to the Line of Battle on the same Tack, the Weather Column forming the Van and the Lee Column the Rear.—Fig. 39.

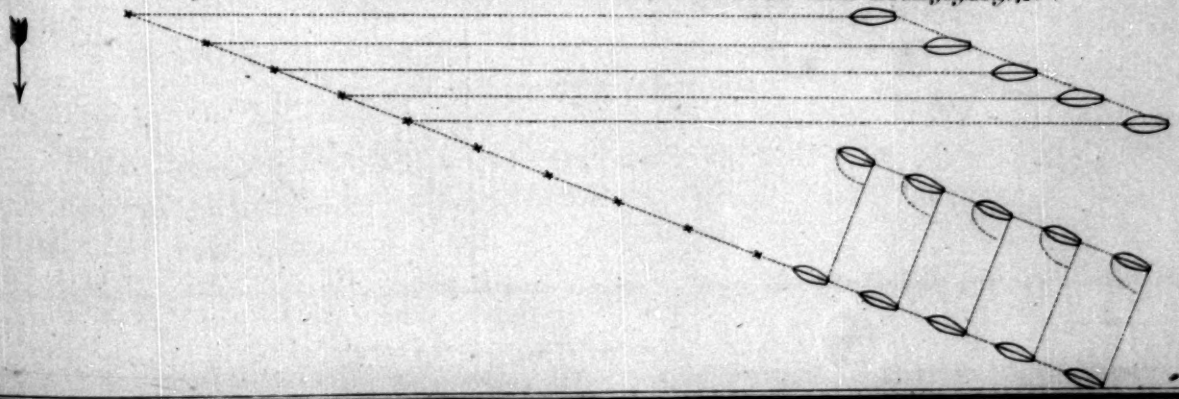


A Second Method of performing this Evolution.—Fig. 40.



A Third Method of performing this Evolution.—Fig. 41.

To change from the Fifth Order to the Line of Battle on the same Tack, the Centre and Lee Columns interchanging.—Fig. 42.



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TACTICS.—Plate VIII.

To change from the Fifth Order to the Line of Battle on the same Tack, the Weather and Centre Columns interchanging.

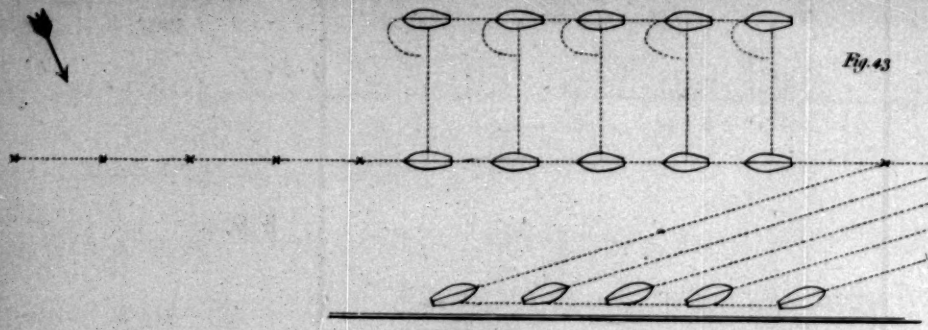
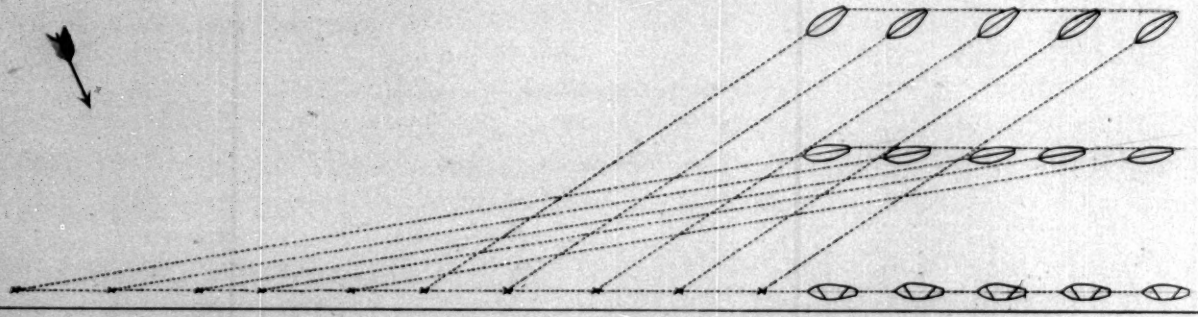
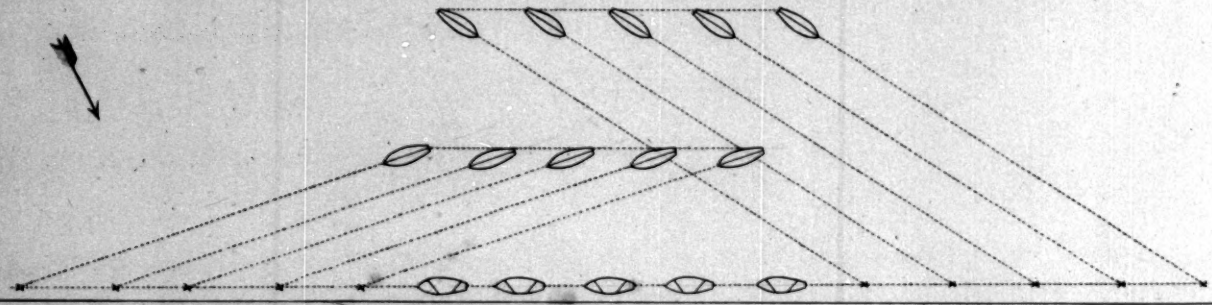


Fig. 43

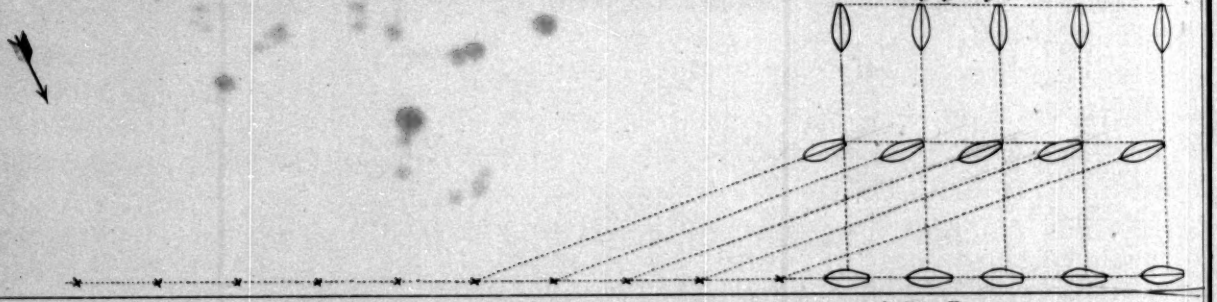
Another Method of performing this Evolution.—Fig. 44.



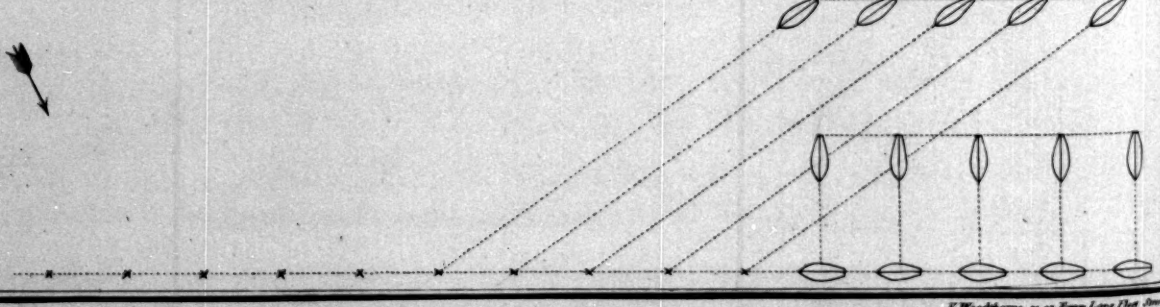
To change from the Fifth Order to the Line of Battle on the same Tack, the Weather Column passing to the Rear.—Fig. 45.



To change from the Fifth Order to the Line of Battle on the same Tack, the Weather and Lee Columns interchanging.—Fig. 46.



To change from the Fifth Order to the Line of Battle on the same Tack, the Lee Column passing to the Van.—Fig. 47.



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it re-tacks together, and brings to. When the lee column has gained the rear of the line, it re-tacks together, and then all ſtand on.

If it be intended to form the line a-head of the column to leeward, [Tactics, pl. VII. fig. 40.] the lee column brings to, or only keeps ſteerage way. The center makes an eaſy ſail two points free, to get a-head of the rear ſquadron; while the van preſſes ſail alſo two points free, to get a-head of the center diviſion.

The two preceding evolutions have their advantages in different circumſtances: but the moſt general mode is the following.

The center brings to, or only keeps ſteerage way; [Tactics, pl. VII. fig. 41.] The weather column bears away two points, and places itſelf a-head of the center. The lee column tacks together, and runs cloſe-hauled under a preſs of ſail, to gain the wake of the center, when it re-tacks together, and completes the line.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE SAME TACK, THE CENTER AND LEE COLUMNS INTERCHANING.

THE lee column ſtands on under an eaſy ſail, keeping as cloſe as poſſible to the wind. [Tactics, pl. VII. fig. 42.] The center brings to until it can bear down into the wake of the new center ſquadron; or it may veer round, and go under eaſy ſail ſix points large on the other tack, and ſo gain the rear of the line. The weather column will, from the beginning, bear away two points under a preſs of ſail, to reach the head of the line.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE SAME TACK, THE WEATHER AND CENTER COLUMNS INTERCHANGING.

THE center column ſtands on. [Tactics, pl. VIII. fig. 43.] The lee column tacks together, and goes under a preſs of ſail, from a little to two points large, ſo as juſt to gain the rear of the line; which when accompliſhed, it re-tacks together, while the weather column, bearing away eights points, will occupy the ſtation left vacant by the new van ſquadron.

If the line is to be formed a-head of the lee column, [Tactics, pl. VIII. fig. 44.] that ſquadron muſt bring to. The center ſquadron will bear away together one point, and carry ſail to gain the head of the line; and the weather ſquadron will bear away together three points under an eaſy ſail to gain the wake of the new van ſquadron.

This evolution is particularly expedient when the ſhips of the rear ſquadron are very wide apart, or when ſome of them are very far a-ſtern, as it gives them time to come up, and form at their regular diſtances.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE SAME TACK, THE WEATHER COLUMN PASSING TO THE REAR.

THE lee column brings to, or keeps only ſteerage way, as cloſe to the wind as poſſible. [Tactics, pl. VIII. fig. 45.] The center column bears away together two points, and forms on the line a-head of

the new center ſquadron. The weather column, veering together, and going ſeven points free on the other tack, will gain its ſtation in the rear under an eaſy ſail.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE SAME TACK, THE WEATHER AND LEE COLUMNS INTERCHANGING.

THE lee column ſtands on under a preſs of ſail. [Tactics, pl. VIII. fig. 46.] The center column bears away two points, with very little ſail, to get into the wake of the new van ſquadron; while the weather column, bearing away eight points, and making alſo little ſail, will gain the rear of the line.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE SAME TACK, THE LEE COLUMN PASSING TO THE VAN.

THE lee column ſtands on, carrying ſail. [Tactics, pl. VIII. fig. 47.] The center column bears away together eight points, under very little ſail, to gain the rear of the line. The weather column bears away together three points, under an eaſy ſail. When the weather and center columns are in the wake of the new van ſquadron they ſpring their luffs.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE OTHER TACK.

THE weather column begins the evolution by tacking in ſucceſſion. [Tactics, pl. IX. fig. 48.] The center and lee columns ſtand on, till their reſpective leaders can tack in the wake of the line, when they tack in ſucceſſion.

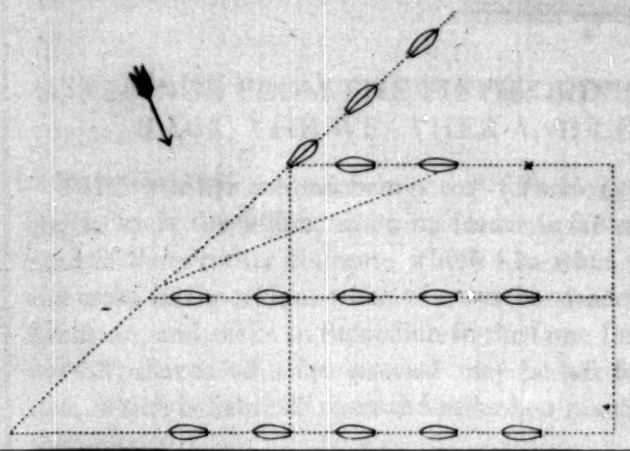
The two columns to leeward muſt carry an eaſy ſail, leſt they draw too near the rear of the weather column. Should that, however, be the caſe, let the leader of the center column be careful, and keep ſomewhat to leeward of the ſternmoſt ſhip of the weather column; and the leader of the lee column muſt act in the ſame manner by the center column: or they may ſtand on beyond the wake of the column immediately to windward of them reſpectively, and tack to windward. They may then take their ſtations, and form the line with facility.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE OTHER TACK, THE CENTER AND LEE COLUMNS INTERCHANGING.

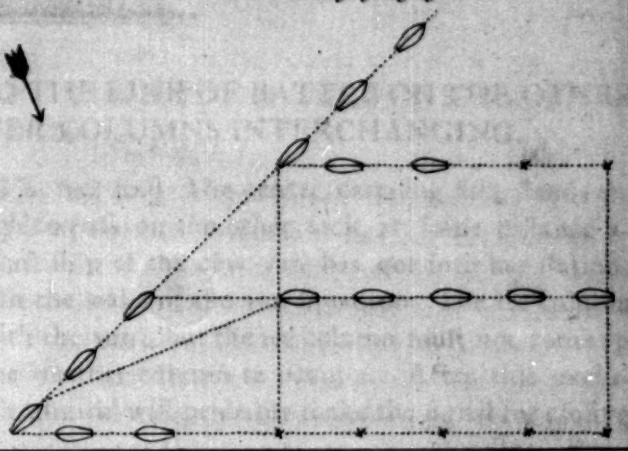
THE weather column tacks in ſucceſſion, under very little ſail; [Tactics, pl. IX. fig. 49.] the center column brings to, and the lee column ſtands on under a preſs of ſail. When the lee leader has gained the wake of the line, he tacks, and is followed in ſucceſſion by his diviſion. The center column is to fill

TACTICS.—Plate IX.

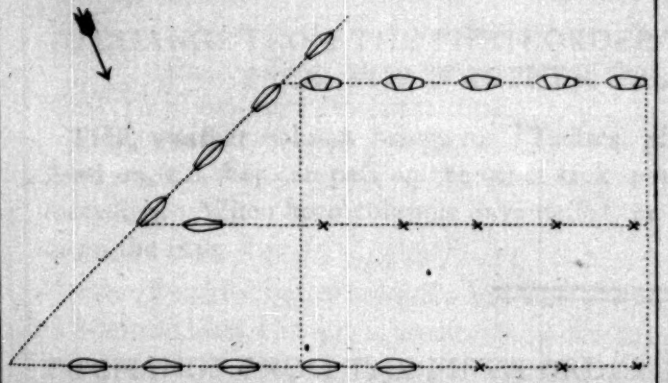
To change from the fifth Order to the Line of Battle on the other Tack.—Fig. 48.



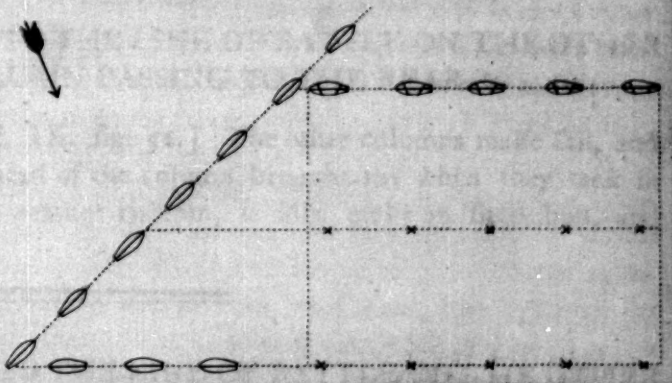
To change from the fifth Order to the Line of Battle on the other Tack, the Centre and lee Columns interchanging.—Fig. 49.



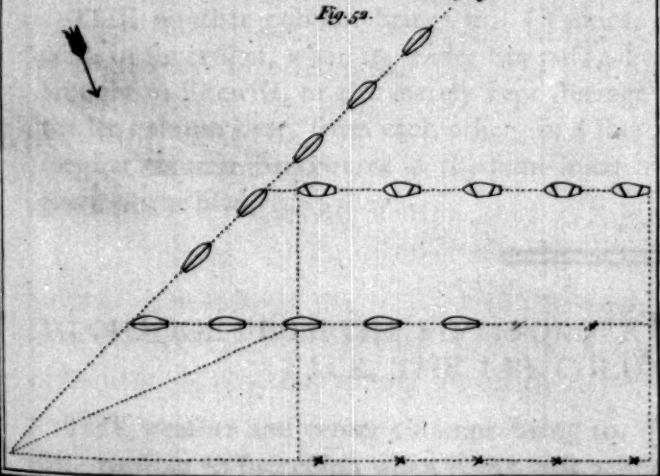
To change from the fifth Order to the Line of Battle on the other Tack, the Weather and Centre Columns interchanging.— Fig. 50.



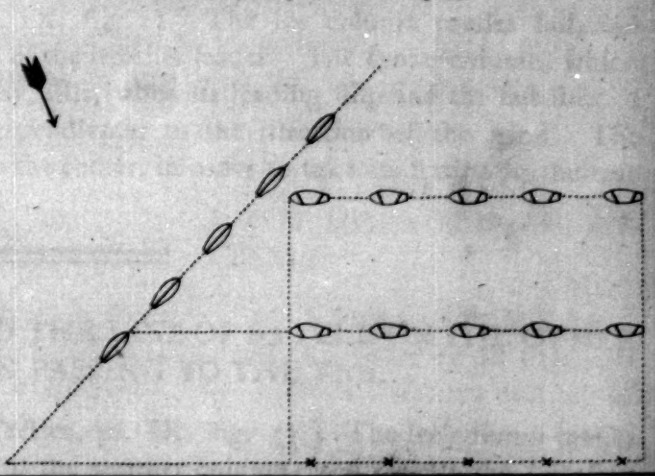
To change from the fifth Order to the Line of Battle on the other Tack, the Weather Column passing to the Rear.— Fig. 51.



To change from the fifth Order to the Line of Battle on the other Tack, the Weather and lee Columns interchanging. Fig. 52.



To change from the fifth Order to the Line of Battle on the other Tack, the lee Column passing to the Van.— Fig. 53.



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and ſtand on, when its firſt ſhip and the laſt ſhip of the lee column bear from each other in a line perpendicular to the direction of the wind, or when the center ſhip of the lee column paſſes a-head of the center column. Theſe two bearings will of courſe occur at the ſame inſtant, if the ſhips manœuvre with preciſion.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE OTHER TACK, THE WEATHER AND CENTER COLUMNS INTERCHANGING.

THE weather column brings to. [Tactics, pl. IX. fig. 50.] The center, carrying ſail, ſtands on, and tacks in ſucceſſion, when its leader is far enough to paſs on the other tack at ſome diſtance a-head of the weather column; which fills when the laſt ſhip of the new van has got into her ſtation; and tacks in ſucceſſion, when the weather leader is in the wake of the van ſquadron. The lee column ſtands on, and tacks in ſucceſſion in the ſame line with the van; but the lee column muſt not come up too faſt, that a ſufficient interval may be left for the weather column to occupy. After this evolution, which is liable to open the order too much, the admiral will probably make the ſignal for cloſing the line.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE OTHER TACK, THE WEATHER COLUMN PASSING TO THE REAR.

THE weather column brings to. [Tactics, pl. IX. fig. 51.] The other columns make ſail, and ſtand on, till they can paſs on the other tack a-head of the column brought-to; when they tack in ſucceſſion. When both columns have paſſed the weather column, it fills, tacks in ſucceſſion, and forms the rear.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE OTHER TACK, THE WEATHER AND LEE COLUMNS INTERCHANGING.

THE weather column brings to. [Tactics, pl. IX. fig. 52.] The lee column preſſes ſail, and tacks in ſucceſſion, when its leader can paſs a-head of the weather leader. The center column, which brought to likewiſe, or elſe merely kept ſteerage way, fills, when its leading ſhip and the laſt ſhip of the lee column bear, from each other, in a line perpendicular to the direction of the wind. The weather column manœuvres in the ſame manner as the center, in order to take its ſtation as the rear guard of the line.

TO CHANGE FROM THE FIFTH ORDER TO THE LINE OF BATTLE ON THE OTHER TACK, THE LEE COLUMN PASSING TO THE VAN.

THE weather and center columns bring to. [Tactics, pl. IX. fig. 53.] The lee column preſſes ſail; tacking in ſucceſſion when it can paſs a-head of the weather column; and, when the laſt ſhip

of this new van has paſſed to windward of the former weather column, the van ſquadron leſſens ſail, to give time for the other columns to form. The weather and center columns fill at the ſame time, to gain the wake of the line; when they tack in ſucceſſion.

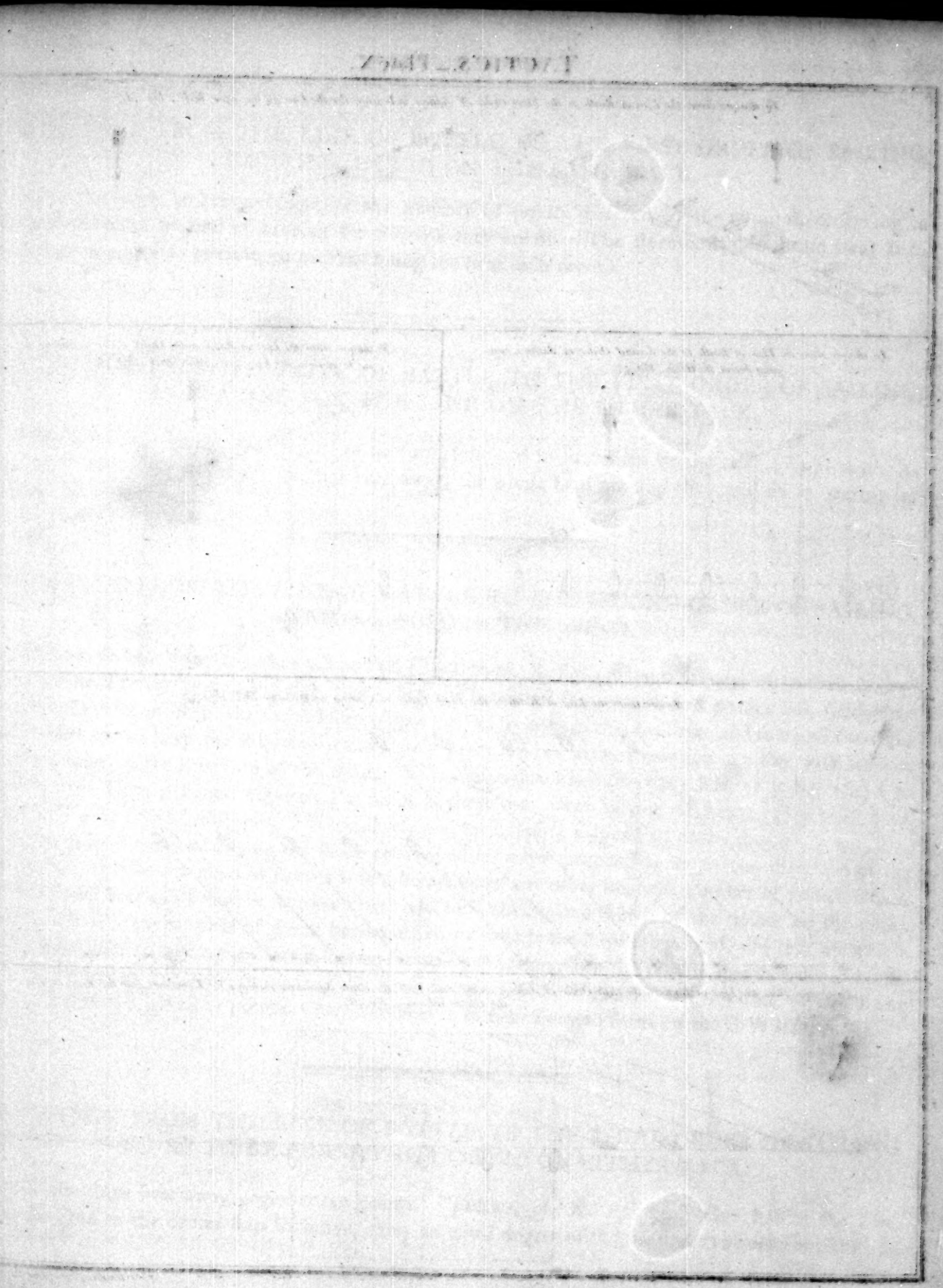
OF MANŒUVERING IN THE FIFTH ORDER OF SAILING IN SIX OR NINE COLUMNS.

WHEN fleets are numerous, their order of ſailing is uſually in ſix or nine columns, inſtead of three; that is, the van is divided into two or three columns, and ſo are the center and rear. If the fleet be in ſix columns, the admirals place themſelves a-breaſt of each other, [Tactics, pl. I. fig. 7.] ſomewhat a-head and in the middle of the interval of their reſpective columns; or, if the fleet be in nine columns, they place themſelves at the head of their reſpective center columns. But, in either caſe, each ſquadron muſt manœuvre itſelf in the ſame manner as if it were an order in three columns. It is therefore here unneceſſary to enter into a more particular detail of them. We need only add, that, if the fleet be in three columns, it is eaſily formed in ſix or nine columns, if the ſhips which are to form the firſt columns of each ſquadron bring to, and the others bear away ſucceſſively two points, or to leeward of the ſhips of their reſpective firſt column: and, if the fleet be in ſix or nine columns, it may be reduced to three, by each ſquadron of two or three columns manœuvering in the ſame manner, as if it were a ſeparate fleet in two or three columns changing to the line of battle.

In order to ſhew the relative extent which is occupied by a fleet in three columns and in ſix, let us ſuppoſe a fleet of 60 ſhips. If divided into three columns of 20 ſhips each, diſtant from each other's main maſts one cable's length, the length of a column will be 19 cables nearly, and the diſtance between the columns muſt be 8 cables: conſequently the front of the order will be 16 cables, and the whole extent occupied by the fleet will be 304 ſquared cables. The ſame fleet divided into 6 columns of 10 ſhips each, will have its columns 9 cables long; and the columns being diſtant from each other $3\frac{1}{4}$ cables, the whole front will be $18\frac{1}{4}$ cables, and the whole extent occupied by the fleet will be only 109 ſquared cables. The fleet is thus in a more connected form in ſix than in three columns: nor is this the only advantage; for the laſt ſhip of the lee column being, in the latter caſe, farther a-ſtern than in the former, it follows that it muſt be more to leeward. For large fleets, therefore, this form of ſix or nine columns is well adapted; ſince their ſtations will be eaſily preſerved, the ſignals better ſeen, and leſs time will be conſumed in evolutions, particularly in reducing it to the order of battle.

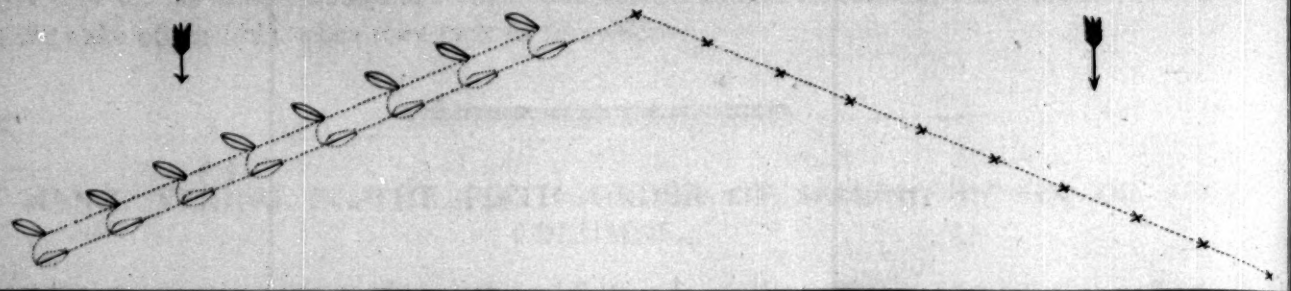
TO CHANGE FROM THE LINE OF BATTLE TO THE FIRST ORDER OF SAILING, CLOSE-HAULED ON THE OTHER TACK.

ALL the ſhips tack together, by which their tack and line of bearing will be different; that is, they will be in bearing to form the line on the tack which they have left. The ſternmoſt ſhip of the line puts firſt in ſtays; and, when ſhe is obſerved to be ſo, her ſecond a-head *immediately* puts the helm down; and ſo on through the whole line.

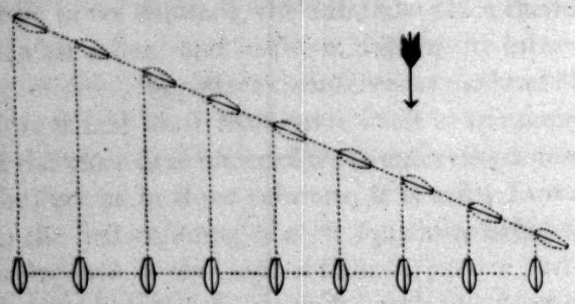


TACTICS._ Plate X.

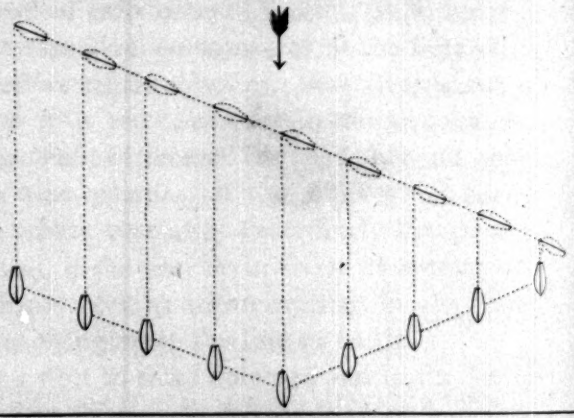
To change from the Line of Battle to the First Order of Sailing, in bearing for the Line on the other Tack._Fig.54.



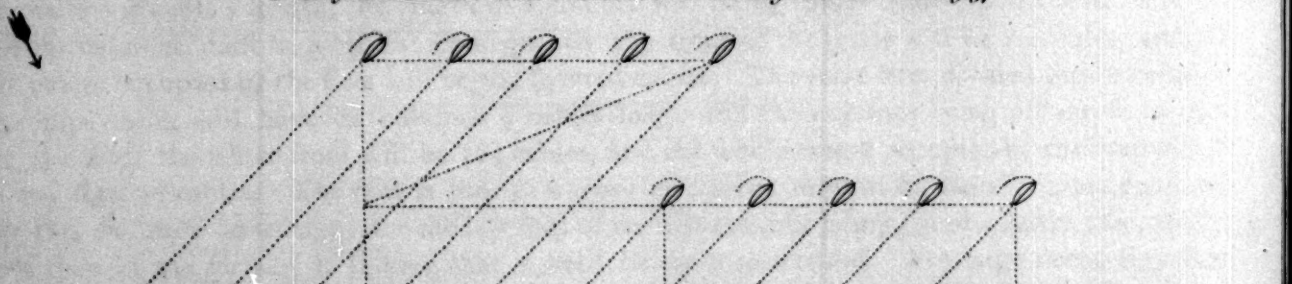
To change from the Line of Battle to the Second Order of Sailing, running before the Wind._Fig.55.



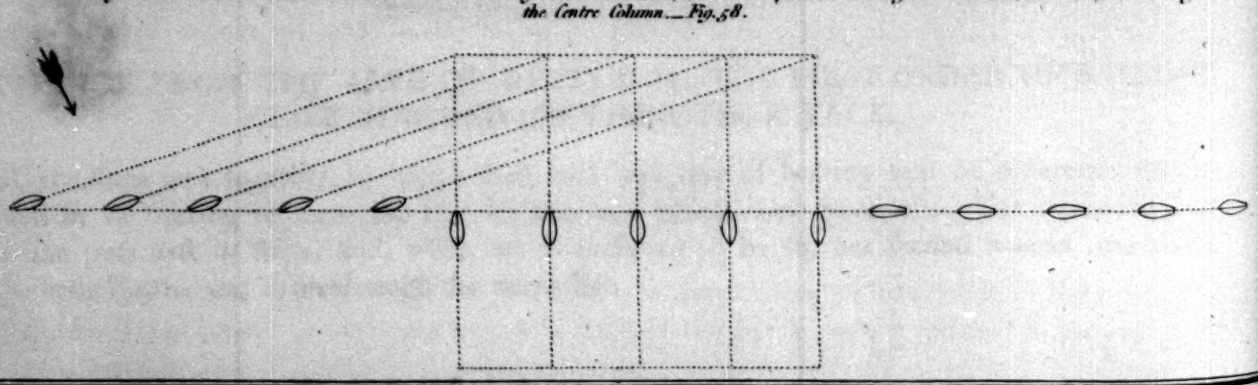
To change from the Line of Battle to the Third Order of Sailing, so as to re-form the Line upon either Tack._Fig.56.



To change from the Line of Battle to the Fifth Order of Sailing on the same Tack._Fig.57.



To change from the Line of Battle to the fifth Order of Sailing on the same Tack, the Centre Squadron forming to Leeward, and the Rear forming the Centre Column._Fig.58.



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TO CHANGE FROM THE LINE OF BATTLE TO THE FIRST ORDER OF SAILING, RUNNING LARGE ON THE SAME TACK.

ALL the ſhips bear away together the number of points directed by the admiral, obſerving to keep themſelves in line of bearing for the tack they are on. The ſternmoſt ſhip bears away firſt, and ſo on as quick as poſſible, to prevent being too near each other.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIRST ORDER OF SAILING, IN BEARING FOR THE LINE ON THE OTHER TACK.

THE leader bears away four points to leeward, followed in ſucceſſion by the reſt. [Tactics, pl. X. fig. 54.] When the ſternmoſt ſhip has bore away, the whole haul up, and they will be in bearing for the line on the other tack.

TO CHANGE FROM THE LINE OF BATTLE TO THE SECOND ORDER OF SAILING, RUNNING BEFORE THE WIND.

THE whole bear away together ten points, [Tactics, pl. X. fig. 55.] and ſo proportion their ſailing from the head to the rear of the line, that, when the headmoſt ſhip, which firſt preſſes ſail, ſhall come a-breaſt of the ſecond ſhip, the ſecond ſhip adapts her ſail to keep in this bearing; and ſo on all through; each obſerving to keep the ſhip that immediately preceded her in the evolution in a line with herſelf, perpendicular to the direction of the wind. This will rather cloſe the line; but, if it be deſired to preſerve the ſame diſtance between the ſhips as there was when in line of battle, they muſt bear away only nine points, obſerving ſtill the directions for keeping a-breaſt of each other.

In the ſecond order of ſailing the ſhips are ranged on a line perpendicular to the direction of the wind; but, if it be intended to form a line a-breaſt upon any other line, the number of points which the fleet muſt bear away may be known thus: add to 8, (being one fourth of the points on the compaſs,) one half of the number of points between that on which the ſhips are ranged, and that on which they are intended to be ranged. For inſtance, ſuppoſe a fleet ranged on the W N W line in order of battle is to be formed in line a-breaſt on the S W line. Between W N W and S W are 6 points, of which the half, 3, added to 8, gives 11 points, which the fleet is to bear away to form on the S W line.

TO CHANGE FROM THE LINE OF BATTLE TO THE THIRD ORDER OF SAILING SO AS TO RE-FORM THE LINE, UPON EITHER TACK.

ALL the ſhips bear away together ten points. [Tactics, pl. X. fig. 56.] One half of the line, from the head to the center ſhip inclusive, carry an equal degree of ſail, in order to preſerve their line

of bearing: but the remainder of the ſhips carry ſail in ſucceſſion, and only in ſuch degrees as will form and preſerve them on that cloſe-hauled line upon which they were *not* running before this evolution.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE SAME TACK.

TO perform this evolution, and at the ſame time keep to windward as much as poſſible, the van and center tack together, [Tactics, pl. X. fig. 57.] and run cloſe-hauled in bow-and-quarter line. The rear keeps her tack on an eaſy ſail. The center re-tacks, when it is ſhip to ſhip a-breaſt of the rear. The van ſtands on till the center and rear come up, and then it re-tacks; and all the columns regulate their diſtances.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE SAME TACK, THE CENTER SQUADRON FORMING TO LEEWARD, AND THE REAR FORMING THE CENTER COLUMN.

THE van tacks together, [Tactics, pl. X. fig. 58.] and goes away two points free, to gain the diſtance of the center. The center bears away eight points under an eaſy ſail. When the van is ſhip for ſhip with the center, and of courſe in its wake, the van re-tacks. The rear ſtands on to occupy the center ſtation; and, when the new lee column is ſhip to ſhip a-breaſt of the new center, its ſprings its luff.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE SAME TACK, THE CENTER FORMING THE WEATHER COLUMN, AND THE VAN SQUADRON BECOMING THE CENTER.

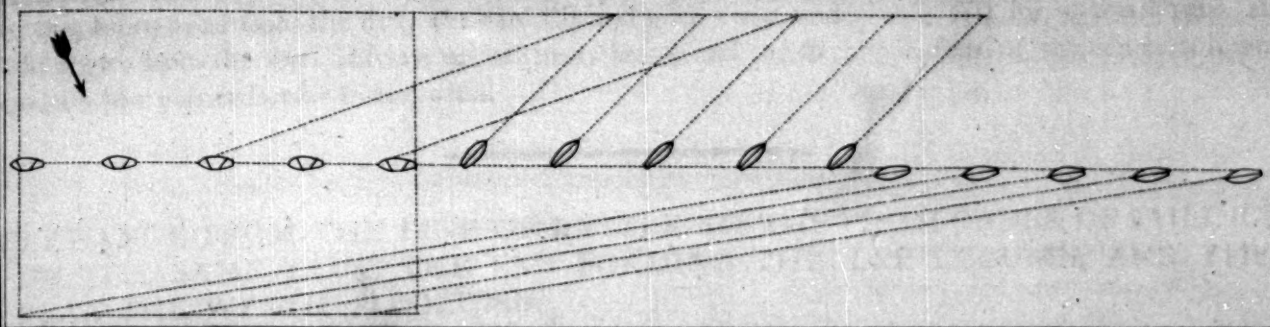
THE van brings to, and ſerves as a mark for this evolution. [Tactics, pl. XI. fig. 59.] The center tacks together, and carries ſail cloſe-hauled, until the leader has the center ſhip of the van diviſion, which is brought-to, at right angles with the wind. He and his diviſion then re-tack together; and they will find themſelves rather farther to windward than neceſſary, but this is in their favour. In the mean time the rear ſquadron goes under an eaſy ſail, one point from the point, in order to range up with the column which has brought to during this evolution: and, when the two columns in motion are drawn up a-breaſt and on each ſide of the column, now the center, that column fills, and they regulate their diſtances.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE SAME TACK, THE VAN COLUMN PASSING TO LEEWARD.

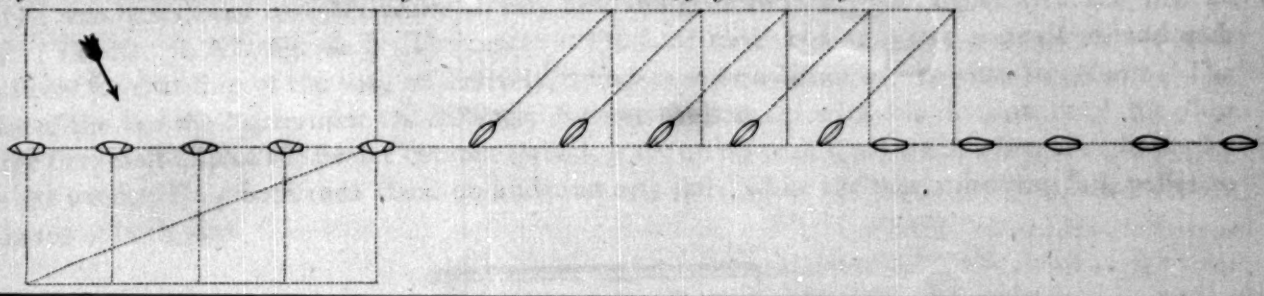
THE van brings to. [Tactics, pl. XI. fig. 60.] The center tacks together and carries ſail cloſe-hauled, until it comes ſhip to ſhip a-breaſt of the rear, (which has from the beginning ſtood under

TACTICS.—Plate.XI.

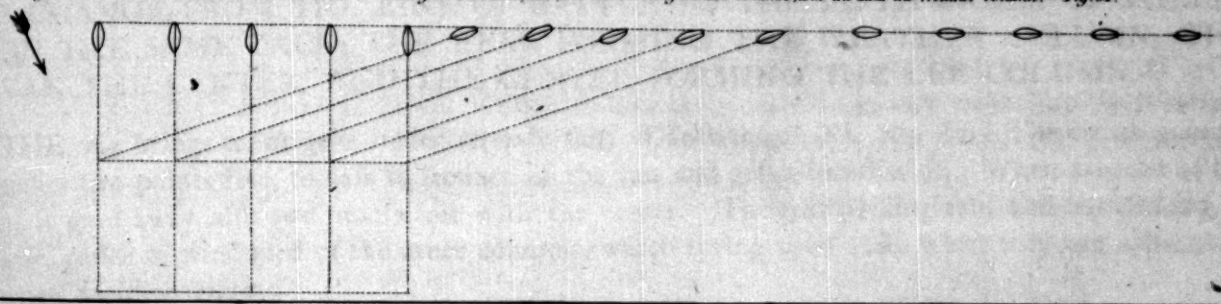
To change from the Line of Battle to the Fifth Order of Sailing on the same Tack, the Centre forming the Weather Column, and the Van Squadron becoming the Centre.—Fig.59.



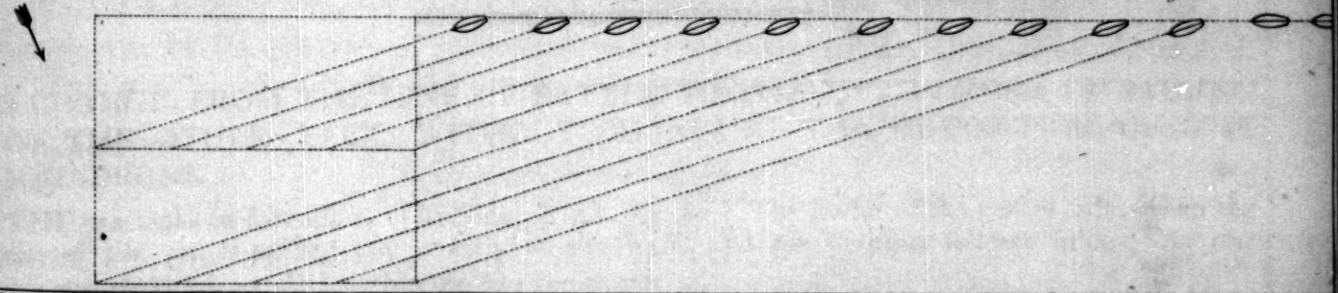
To change from the Line of Battle to the Fifth Order of Sailing on the same Tack, the Van Column passing to leeward.—Fig.60.



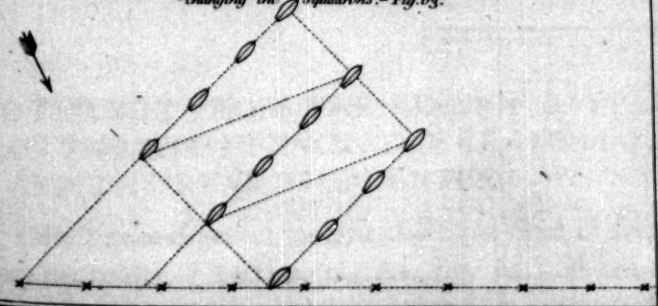
To change from the Line of Battle to the Fifth Order of Sailing on the same Tack, the Van forming the Lee Column, and the Rear the Weather Column.—Fig.61.



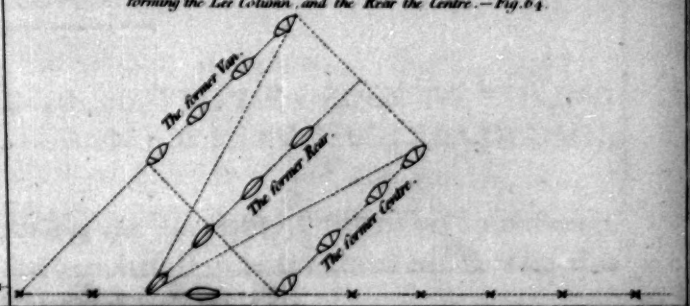
To change from the Line of Battle to the Fifth Order of Sailing on the same Tack, the Rear forming the Weather Column, the Van the Centre, and the Centre the Lee Column.—Fig.62.



To change from the Line of Battle to the Fifth Order of Sailing on the other Tack, without interchanging the Squadrons.—Fig.63.



To change from the Line of Battle to the Fifth Order of Sailing on the other Tack, the Centre Squadron forming the Lee Column, and the Rear the Centre.—Fig.64.



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an eaſy ſail,) and then the center re-tacks together. When the rear is near paſſing to windward of the van, brought to from the firſt, the van fills and goes away under eaſy ſail for a ſmall time at right angles from the line; it hauls up, when its leader and the ſternmoſt ſhip of the center column bear in a line perpendicular to the wind.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING, ON THE SAME TACK, THE VAN FORMING THE LEE COLUMN, AND THE REAR THE WEATHER COLUMN.

THE van bears away together under an eaſy ſail, and goes away at right angles with the line a-head. [Tactics, pl. XI. fig. 61.] The center at the ſame time goes away two points free, and each ſhip ſteers for that ſhip of the van, reſpectively, which is to be a-breaſt of her when in column. The leader of the van muſt determine the diſtance, by not hauling up with his diviſion until his ſhip and the ſternmoſt ſhip of the center column (which is drawn up with him) are in a line at right angles with the wind. They both then ſtand on under an eaſy ſail; while the rear, crowding ſail, paſſes to windward of both.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE SAME TACK; THE REAR FORMING THE WEATHER COLUMN, THE VAN THE CENTER, AND THE CENTER FORMING THE LEE COLUMN.

THE van brings to, or goes under an eaſy ſail. [Tactics, pl. XI. fig. 62.] The center goes off together two points free, to paſs to leeward of the van and get a-breaſt of it. When a-breaſt of the van, it goes away alſo two points free with the center. The rear preſſing ſail, and not altering its courſe, paſſes to windward of the other columns, which ſpring their luffs when they are a-breaſt of the new weather column.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE OTHER TACK, WITHOUT CHANGING THE DISPOSITION OF THE SQUADRONS.

THE van tacks in ſucceſſion. [Tactics, pl. XI. fig. 63.] The leader of the center tacks when the leader of the van is paſſing him exactly to windward, and his diviſion follows him. The rear manœuvres in the ſame way, with reſpect to the center.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE OTHER TACK, THE CENTER SQUADRON FORMING THE LEE COLUMN, AND THE REAR THE CENTER.

THE van and center tack at the ſame time in ſucceſſion, the van carrying ſail, to get up and range with the center. [Tactics, pl. XI. fig. 64.] When the ſternmoſt ſhip of the center has tacked, that

column brings to, or carries a very eaſy ſail. The rear, having ſtood on, tacks in ſucceſſion at that point of the line; when the leaders of the new van and lee columns bear, from the rear leader, an equal number of points to windward and to leeward. He is then followed by his diviſion; and, when he has got a-breaſt of the two leading ſhips of the van and lee columns, the evolution is compleated.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE OTHER TACK, THE CENTER SQUADRON FORMING TO WINDWARD, AND THE VAN IN THE CENTER.

THE van tacks in ſucceſſion; [Tactics, pl. XII. fig. 65.] and, when about, keeps juſt on ſteerage way. The center carries ſail, and tacks, either when the center ſhip of the diviſion has paſſed the ſternmoſt of the van which tacked before it, or when the leader of the new weather column has the ſternmoſt ſhip of the new center column in a line at right angles with the wind. When he is about, his diviſion follows, carrying ſail to gain the diſtance a-breaſt of the new center. The rear tacks in ſucceſſion, when the firſt ſhip of the diviſion is a-breaſt of the ſternmoſt ſhip of the center: it then adapts its ſail to the other columns.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE OTHER TACK, THE VAN SQUADRON FORMING TO LEEWARD, THE CENTER TO WINDWARD, AND THE REAR IN THE CENTER.

THE van makes ſail and tacks in ſucceſſion; [Tactics, pl. XII. fig. 66.] when about, the column brings to or carries a very eaſy ſail. The leader of the center column, which is now to form to windward, tacks as ſoon as the laſt of his column paſſes a-ſtern of the new lee column, and is followed in ſucceſſion by his diviſion. The leader of the rear, which is to form the center column, tacks, either when a-breaſt of the leader of the windward column, *or* when his center ſhip paſſes a-ſtern of the lee column, *or* when he has the center ſhip of the lee column in a line at right angles with the wind. When the rear has tacked, the lee column fills; and all the columns make proper ſail for regulating the order.

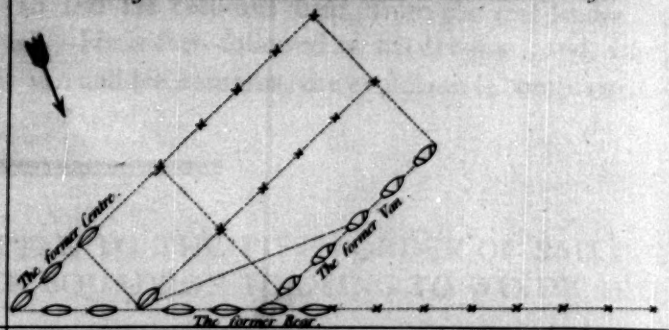
TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE OTHER TACK, THE VAN SQUADRON FORMING TO LEEWARD, AND THE REAR TO WINDWARD.

THE van tacks in ſucceſſion, carrying ſail; [Tactics, pl. XII. fig. 67.] and, when the column is about, it muſt bring to or ſhorten ſail, to allow the other columns time to form. The center and rear then carry ſail, and tack in ſucceſſion. The center tacks, when its leader has the center of the lee column in a line at right angles with the wind, *or* when its center paſſes a-ſtern of the lee column. When the center is about, it regulates itſelf by the lee column, either by bringing to or

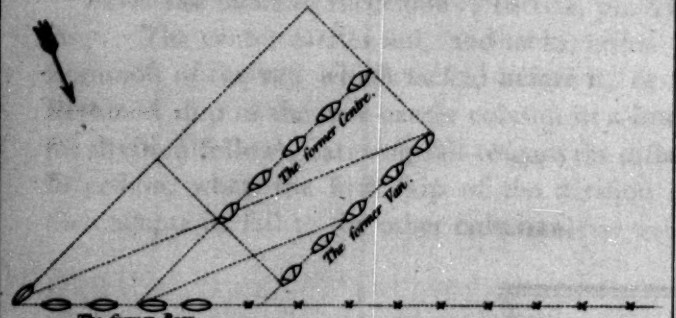
TACTICS.—Plate.XII.

To change from the Line of Battle to the Fifth Order of Sailing on the other Tack, the Centre Squadron forming to Windward and the Van in the Centre.—Fig.65.

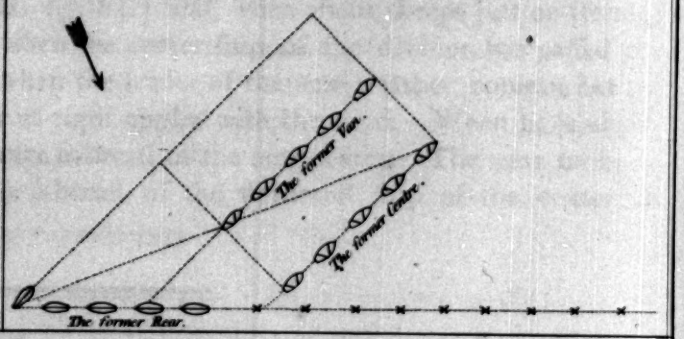
To change from the Line of Battle to the Fifth Order of Sailing on the other Tack, the Van Squadron forming to leward, the Centre to Windward and the Rear in the Centre.—Fig.66.



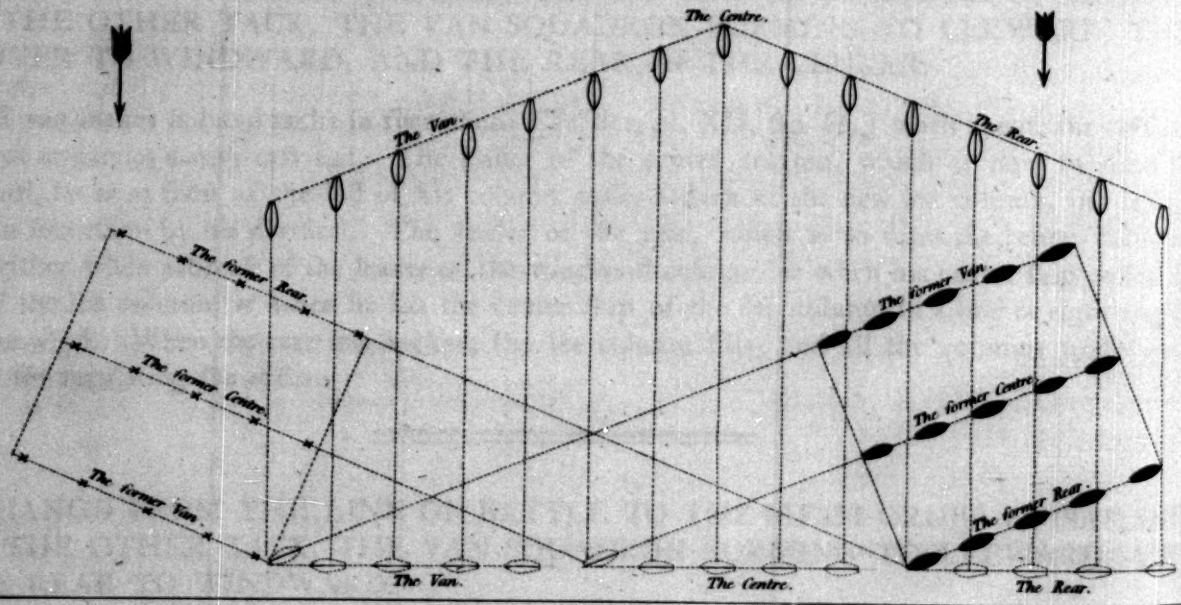
To change from the Line of Battle to the Fifth Order of Sailing on the other Tack, the Van Squadron forming to leward and the Rear to Windward.—Fig.67.



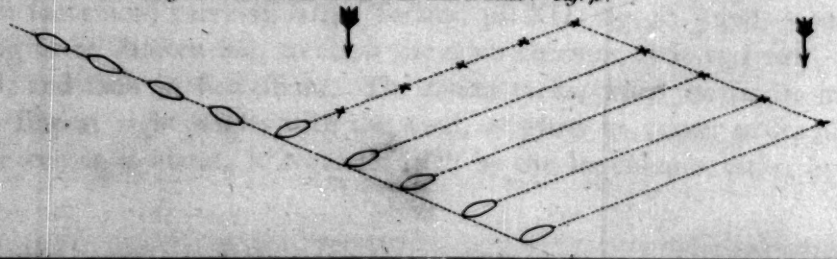
To change from the Line of Battle to the Fifth Order of Sailing on the other Tack, the Rear Squadron forming to Windward, Van as Centre and Centre Squadron to leward.—Fig.68.



To change from the Order of Retreat to the Fifth Order of Sailing.—Fig.69.



To change from the Order of Retreat to the Line of Battle.—Fig.70.



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making equal ſail; and thus both wait for the rear to paſs to windward. The rear tacks, when its leader has the firſt ſhip of the lee column in a line at right angles with the wind, *or* when its center ſhip paſſes a-ſtern of the laſt ſhip of the center column.

TO CHANGE FROM THE LINE OF BATTLE TO THE FIFTH ORDER OF SAILING ON THE OTHER TACK; THE REAR SQUADRON FORMING TO WINDWARD, THE VAN SQUADRON AS CENTER COLUMN, AND THE CENTER SQUADRON TO LEEWARD.

THE van and center tack in ſucceſſion; [Tactics, pl. XII. fig. 68.] and bring to or go under eaſy ſail. The rear, which is to be to windward, carries ſail; and tacks in ſucceſſion when its leader has the headmoſt ſhip of the lee column in a line at right angles with the wind, *or* when its center ſhip paſſes a-ſtern of the center column. The columns then make proper ſail to regulate their diſtances.

TO CHANGE FROM THE LINE OF BATTLE TO THE ORDER OF RETREAT.

THE leader bears away four points, and is followed in ſucceſſion by one half of the line to the center included. When the center has bore away, the order of retreat is formed.

TO CHANGE FROM THE ORDER OF RETREAT TO THE FIFTH ORDER OF SAILING.

THE moſt ſimple method is to paſs to the line a-head, and thence to form the columns. But, if the fleet be ſomewhat diſperſed, it may be performed thus. [Tactics, pl. XII. fig. 69.] It muſt bring-to, on the line perpendicular to the direction of the wind, as in the ſecond order of ſailing; and, to effect this, the two extreme ſhips of the wings having brought to on that line, as ſoon as the other ſhips gain their reſpective ſtations on that line, they bring to in the ſame tack. After which, the ſhips all filling at the ſame time, the leaders of the columns haul their wind upon the proper tack, while the other ſhips of the columns run large two points till they reſpectively gain the points at which their leaders ſpring their luffs, when they haul in ſucceſſion. The lee column having leſs diſtance to run, carries very eaſy ſail; the center and weather columns increaſe theirs, in proportion to their diſtances. According to the tack which the fleet is to take, in the order of ſailing, the van ſquadron will be either to windward or to leeward.

TO CHANGE FROM THE ORDER OF RETREAT TO THE LINE OF BATTLE.

THE leader of the wing which is to form the head of the line hauls the wind, [Tactics, pl. XII. fig. 70.] and that wing follows in ſucceſſion, ſteering in each other's wakes. The other wing goes

four points from the wind together, on the ſame tack, and thus runs parallel to the wing which firſt began the evolution. They haul up together when they arrive in the wake of the line.

If the fleet which retreats is attacked only on one wing, the wing attacked is to heave to the wind ſix points, on the ſame ſide as the enemy; and the van ſhip is at the ſame time to haul cloſe by the wind on the ſame tack; while the ſhips of the other wing ſhall come all together to the wind on their line, in order to veer in ſucceſſion at the angular point, in the wake of the wing attacked.

TO CHANGE AND REFORM UPON SHIFTS OF WIND.

TO CHANGE FROM THE FIFTH ORDER OF SAILING TO THE LINE OF BATTLE, WHEN THE WIND SHIFTS FORWARD.

IF THE WIND COMES FORWARD BUT INCONSIDERABLY, the change may be made in the third mode recommended under the head of "*To change from the fifth order to the line of battle on the ſame tack, the weather "column forming the van, and the lee column the rear.*"

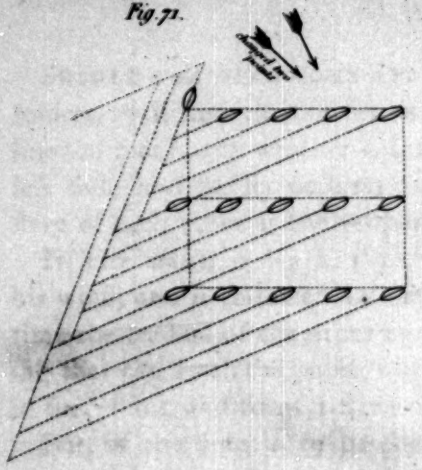
BUT, IF THE WIND SHOULD CHANGE TWO OR THREE POINTS, [Tactics, pl. XIII. fig. 71.] the leader of the column to windward goes about and keeps under an eaſy ſail, and the reſt of his column carrying ſail, but keeping on the ſame tack, go away together in bow-and-quarter line, to gain their leader's wake, where they tack in ſucceſſion. The center-leader will tack ſomewhat to windward of the wake of the weather column, in order to tack clear of it. The leader of the lee column acts in the ſame manner with regard to the center column; and, as the two laſt columns will naturally be to windward of the van, they edge away and form a-ſtern of it. If it be intended to continue the firſt tack, the leader of the weather column muſt re-tack ſoon after his firſt tack, and be followed by the line.

IF THE WIND COMES FORWARD THREE POINTS OR MORE, as the fleet would run too far to leeward by manœuvering as in the preceding evolution, [Tactics, pl. XIII. fig. 72.] the whole may go about together; and the leader of the weather column (the ſhip which is to lead the line) goes away two points free, carrying ſail to gain a-head of his diviſion, while the ſhips of his diviſion keep their wind under an eaſy ſail, to get ſucceſſively into the wake of their leader; when they make ſail and follow him. The van leader continues his courſe large, until he brings the leewardmoſt ſhip of the fleet to bear from him, in the direction of the cloſe-hauled line on the tack upon which they are moving, when he hauls up and continues under an eaſy ſail, (or, if neceſſary, re-tacks,) followed in ſucceſſion by the fleet. The leaders of the center and lee columns go away free two points from the beginning of the evolution, as the leader of the van did; and they form in his wake when they ſpring their luffs, followed by their reſpective diviſions, to complete the line of battle.

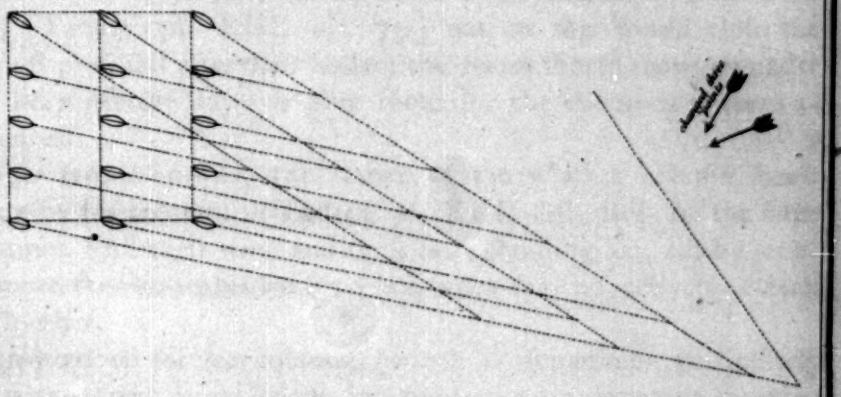
TACTICS_Plate XIII.

To change from the Fifth Order of Sailing to the Line of Battle, when the Wind comes forward two, or three points.

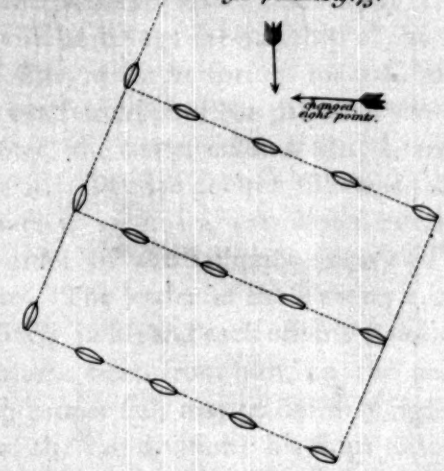
Fig.71.



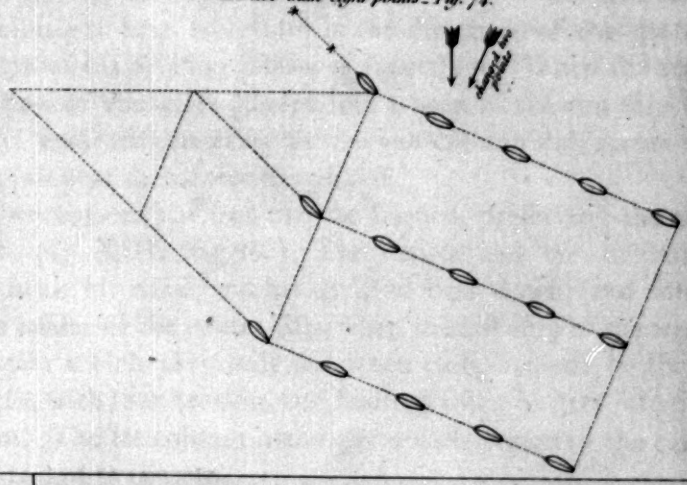
To change from the fifth Order of Sailing to the Line of Battle, when the Wind comes forward three points or more_Fig.72.



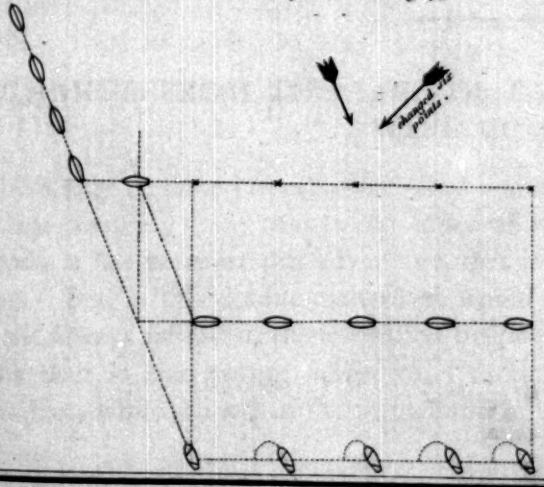
To change from the Fifth Order of Sailing to the Line of Battle, when the Wind comes aft eight points_Fig.73.



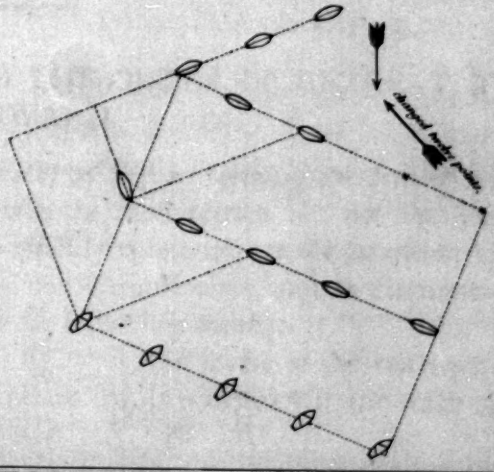
To change from the Fifth Order of Sailing to the Line of Battle, when the Wind comes aft less than eight points_Fig.74.



Another manner of changing from the Fifth Order of Sailing to the Line of Battle, when the Wind comes aft less than eight points_Fig.75.



To change from the Fifth Order of Sailing to the Line of Battle, when the Wind comes aft more than eight points_Fig.76.



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TO CHANGE FROM THE FIFTH ORDER OF SAILING TO THE LINE OF BATTLE, WHEN THE WIND COMES AFT.

SHOULD THE WIND COME AFT EIGHT POINTS EXACTLY, the columns, when hauled up after their leaders, will find themſelves *in line:* [Tactics, pl. XIII. fig. 73.] but, as this would cloſe the line too much, the weather column muſt preſs ſail after their leader; the center ſhould move on under leſs ſail; and the lee column merely keep ſteerage way; to give room for the diviſions to form a-ſtern of each other at the proper diſtances.

IF THE WIND COME AFT LESS THAN EIGHT POINTS, the leader of the weather column hauls his wind, and is followed in ſucceſſion by his column. [Tactics, pl. XIII. fig. 74.] At the ſame time the leaders of the other two columns haul their wind and preſs ſail; ſtanding on, till by tacking they can fetch the point, where the weather leader hauled his wind, when they reſpectively re-tack in ſucceſſion, and form a-ſtern of each other.

But, if the line is to be formed a-head of the lee column, (which is ſometimes particularly convenient for cloſing the order when too open, provided no inconvenience or danger is expected from the falling ſo far to leeward,) the center and lee columns bring to. [Tactics, pl. XIII. fig. 75.] Then the weather leader bears away two, four, ſix, or even eight points, and runs down to leeward, till he brings the van ſhip of the lee column to bear from him in the direction of the cloſe-hauled line, when he ſprings his luff: the ſhips of his diviſion follow in ſucceſſion. When the rear of the weather column has paſſed in the direction of the cloſe-hauled line a-head of the van ſhip of the center, the center column fills, bears away, and, manœuvering as the van column did, forms a-ſtern of it. The lee column fills when the laſt ſhip of the center has paſſed.

IF THE WIND COME AFT MORE THAN EIGHT POINTS, the line may be formed, preſerving the regular order of the columns, thus: [Tactics, pl. XIII. fig.76.] The center and lee columns bring to. The leader of the weather column hauls his wind, and his diviſion bear down, and form ſucceſſively in his and each other's wake. The leader of the center fills, when the laſt ſhip of the weather column bears from him, on the point upon which they will ſail when cloſe-hauled: he then, making proper ſail, may go down at right angles with that bearing, and haul up when he gets into the wake of the van diviſion; his ſhips follow him. The lee column manœuvres with regard to the center, in the ſame manner as the center did with regard to the van.

TO CHANGE FROM THE LINE OF BATTLE TO THE ORDER OF RETREAT, THE WIND COMING FORWARD.

THIS may be done (whether the wind come forward or aft) by firſt re-forming the line of battle, and then changing from that to the order of retreat. This is the moſt certain but not the ſhorteſt method; it has however this advantage, that it does not ſo quickly communicate the intention to the enemy. But, as this double manœuvre would require ſome conſiderable time, and as circumſtances will not always permit it, this evolution may be executed in the following manner.

The fleet in line having fallen off, [Tactics, pl. XIV. fig. 77.] the leader of the van goes four points free, while the reſt of the ſhips ſtand on together cloſe-hauled, in order to gain the wake of the

leader and each other's reſpectively. When the center ſhip has arrived at the angular point, that is, in the wake of his ſecond a-head, that wing is formed. The other wing will be eaſily formed, if (the firſt wing continuing to ſail four points free) the ſhips of the other wing bear away four points free *together*, they running on parallel courſes with the firſt wing. The ſhips of the wing now forming muſt adapt their ſail to place themſelves on the proper line of bearing; which will be effected, when each firſt, ſecond, third, &c. ſhip of one wing bears, from the correſponding ſhip in the other wing, in a line perpendicular to the direction of the wind.

If the admiral ſhould wiſh to ſhape his courſe immediately when the angular ſhip is arrived at her proper ſtation, [Tactics, pl. XIV. fig. 78.] the rear wing will not have time to form with the regularity recommended in the preceding manner; but it muſt be effected by making or ſhortening ſail, as may beſt ſuit each ſhip in running for her proper ſtation.

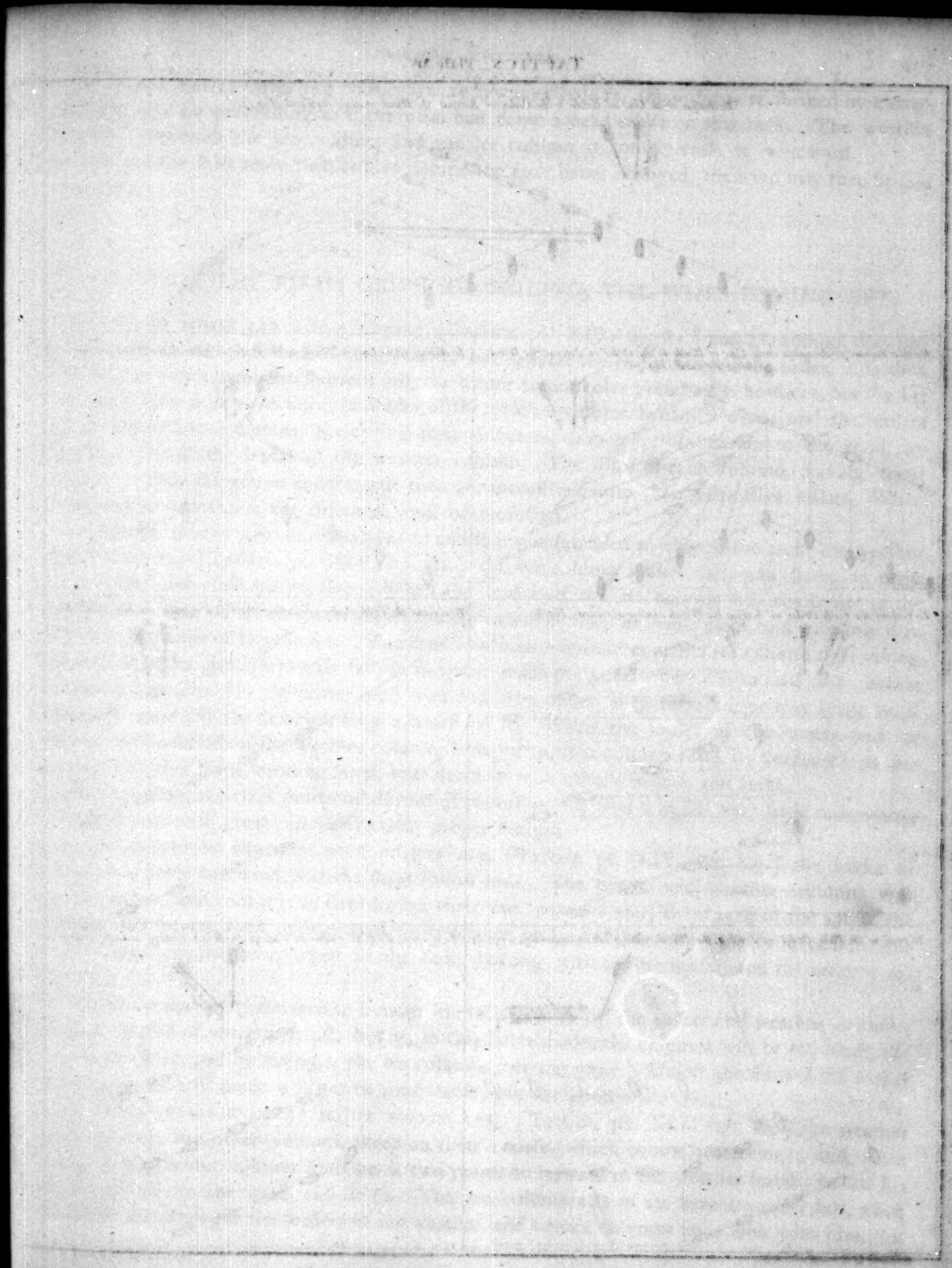
TO CHANGE FROM THE LINE OF BATTLE TO THE ORDER OF RETREAT, THE WIND COMING AFT.

IF THE WIND DRAWS AFT FROM ONE TO FOUR POINTS, [Tactics, pl. XIV. fig. 79.] the leader of the van goes under very little ſail four points free: the ſhips which are to compoſe his wing follow, under ſimilar ſail, and form in his and each other's wakes. The reſt of the line, from the center ſhip to the ſternmoſt, (which have alſo ſtood on the ſame courſe,) as ſoon as the center ſhip is in her proper ſtation, go large together as many points as the change of wind may require; and they obſerve to carry ſail, in proportion to their diſtance from the angular ſhip, the ſternmoſt ſhip carrying moſt of all. The number of points which they are to go large may be always thus known: ſubtract, from 8 points, half the number of points which the wind has ſhifted; ſo, if the wind has come aft 4 points, deduct 2 from 8, and the remainder, 6, is the number of points they are to go large.

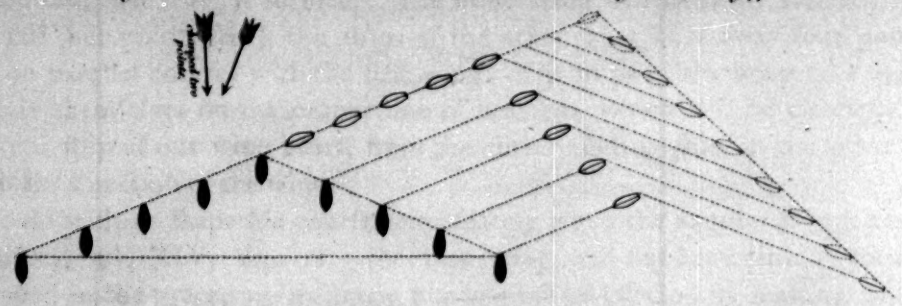
IF THE WIND SHOULD COME AFT MORE THAN FOUR POINTS, this evolution may be expeditiouſly performed, by all the ſhips of the line bearing away before the wind, and ranging themſelves, in the ſecond order of ſailing, on the line perpendicular to the direction of the wind; from that the order of retreat may be afterwards formed.

TO RE-FORM THE FIFTH ORDER OF SAILING, THE WIND COMING FORWARD.

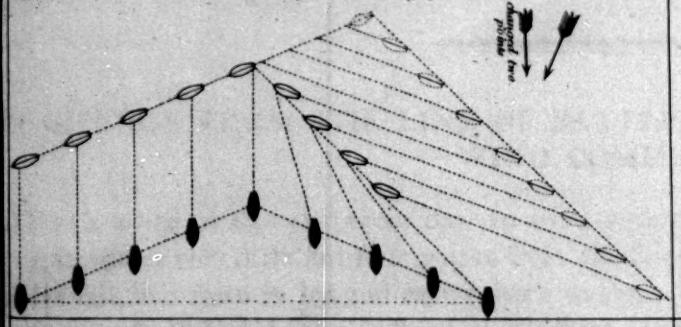
IF THE WIND DOES NOT ALTER MORE THAN SIX POINTS, and it is intended to keep on the ſame tack, each column, conſidered as a ſingle unconnected line, may manœuvre in the ſame way as in re-forming the line of battle; that is, [Tactics, pl. XIV. fig. 80.] the columns having brought to, the leader of each will bear away a certain number of points, according as the wind has changed; and this number may be known by deducting from eight half the number of points the wind has ſhifted: thus, if the wind has come forward two points, the leader runs ſeven points free, and continues ſo to do till he brings the ſternmoſt ſhip of his column to bear from him on the cloſe-hauled line. The other ſhips obſerve to fill and run large one after the other, as their immediate ſeconds a-head come to bear from them reſpectively on the cloſe-hauled line. The ſhips of each column haul their wind when they are all ranged upon the cloſe-hauled line a-head of the ſternmoſt ſhip.



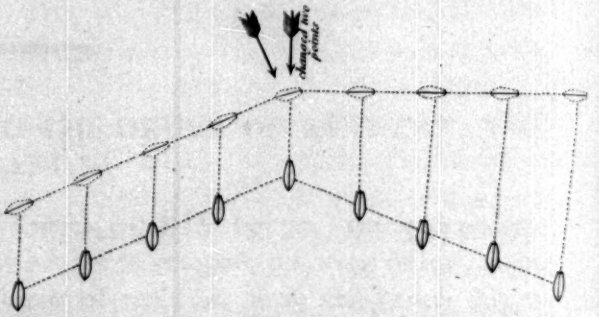
To change from Line of Battle to the Order of Retreat, the Wind coming forward_ Fig. 77.



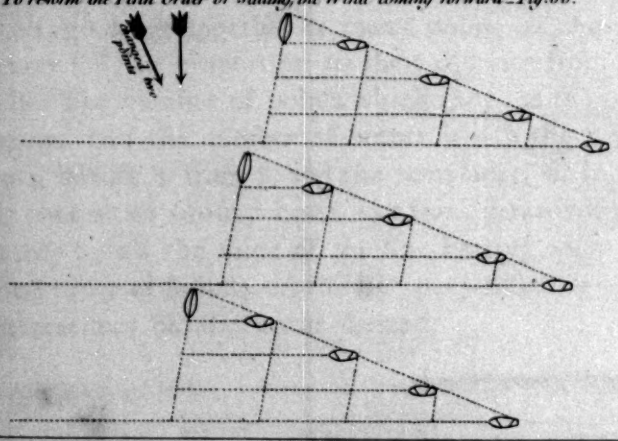
Another manner of changing from Line of Battle to the Order of Retreat, the Wind coming forward. Fig. 78.



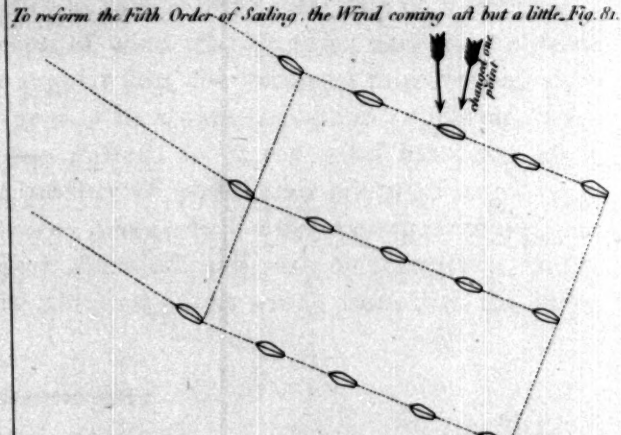
To change from Line of Battle to the Order of Retreat, the Wind coming aft_ Fig. 79.



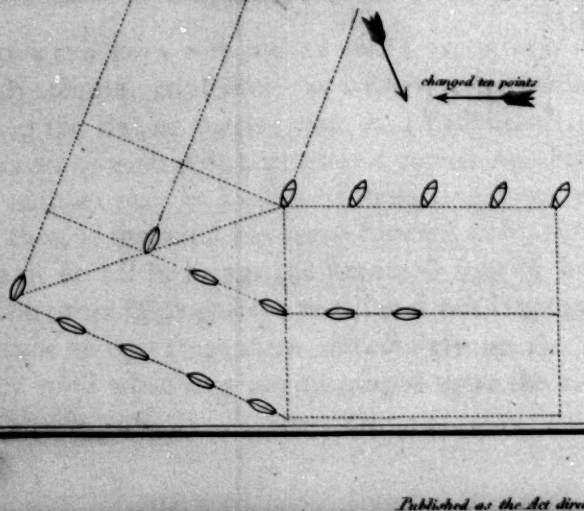
To reform the Fifth Order of Sailing, the Wind coming forward_ Fig. 80.



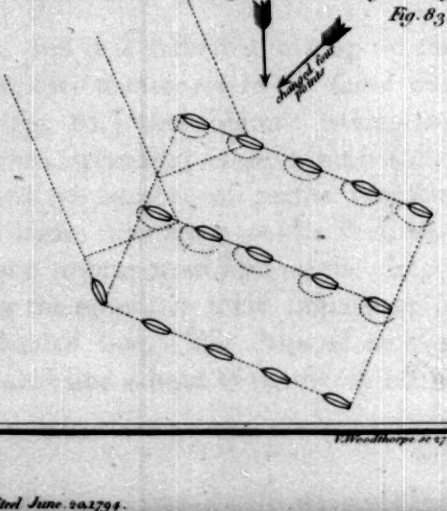
To reform the Fifth Order of Sailing, the Wind coming aft but a little_ Fig. 81.



To re-form the Fifth Order of Sailing, the Wind coming aft considerably_ Fig. 82.



To re-form the Fifth Order of Sailing, the Wind coming exactly four points aft. Fig. 83.



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IF THE WIND COMES FORWAND FROM SIX TO TWELVE POINTS, the order is re-formed by changing the tack, and by proceeding as if the wind had come a-head while on that tack. The weather column then becomes the lee column, and the lee column is conſequently to windward.

Should the wind ſhift more than twelve points, the tack being changed, the wind may then be ſaid to come aft.

TO RE-FORM THE FIFTH ORDER OF SAILING, THE WIND COMING AFT.

IF THE WIND COMES AFT BUT A LITTLE, [Tactics, pl. XIV. fig. 81.] and the admiral does not chooſe the fleet to run cloſe-hauled chequerwiſe, but prefers the re-forming of the order, it is thus performed: the weather column ſhortens ſail, the center column may preſerve its headway, but the lee column muſt carry a preſs of ſail: the leader of the weather column hauls his wind; and the leaders of the center and lee columns, preſerving their diſtances, imperceptibly gather to the wind, by keeping a-breaſt of the leader of the weather column. The ſhips of each column, having equal headway with their reſpective leaders, will then get ſucceſſively into their reſpective wakes. When the order is thus recovered, the diſtances muſt be corrected.

IF THE WIND COMES AFT CONSIDERABLY, and it is not intended to change the tack, the weather column brings to; [Tactics, pl. XIV. fig. 82.] the lee column makes ſail, and ſteers at right angles with the new cloſe-hauled line. When the leader of the lee column has the leader of the weather column four points to windward of the cloſe-hauled line, he hauls cloſe, and is followed in ſucceſſion by the ſhips of his column. The center column manœuvres as the lee column did; taking care, however, to go under very eaſy ſail, ſo as not to reach the point where it is to haul cloſe, before the lee leader has done ſo: the center muſt then continue under very eaſy ſail, or may bring to, if neceſſary, to wait till the lee column is a-breaſt of it. When the leader of the center and lee columns are got a-breaſt of the weather column, brought to, that column fills; its leader keeps his wind; and his other ſhips, running large, bear down in each other's waters, and form.

By this evolution, which is ſhort and devoid of confuſion, the fleet will fall very little to leeward; and the ſhips may with great eaſe regain their proper ſtations.

IF THE WIND SHIFTS EXACTLY FOUR POINTS AFT, [Tactics, pl. XIV. fig. 83.] the leader of the lee column hauls his wind, and the ſhips follow him. The center and weather columns veer round, rear to van, and continue to ſteer ſo, till their van (now the rear) is a-breaſt of the van of the lee column; the center then veers round to its former tack, and hauls its wind in ſucceſſion: the weather column does the ſame, when in the ſame bearing with the lee leader, and the order is re-formed.

This evolution may be performed in a more immediate way, by the center and weather columns bringing to, inſtead of veering round; but as, in this latter mode, the columns will be too cloſe, the intervals muſt be opened by ſteerage, the lee columns bearing away. Unleſs the wind ſhifts *exactly* four points aft, the firſt mode will not be practicable; but the latter will.

IF THE WIND SHIFTS EXACTLY EIGHT POINTS AFT, [Tactics, pl. XIV. fig. 84.] the weather column brings to; the other columns keep on their courſe (which is now quartering); and, when the leader of the center column finds he is two points to leeward of the weather leader, he and his column bring alſo to the wind, and lie to. The lee column acts in the ſame manner; but, when the lee leader has brought the leaders of the weather and center columns in a line with him, (or

two points to windward of him,) he hauls his wind, and ſtands on, followed by his column: the other columns fill, ſtand on, and form, as the lee columns draw up with them.

TO RE-FORM THE LINE OF BATTLE, THE WIND COMING FORWARD.

THE moſt diſadvantageous change of wind that can happen to a fleet in line of battle is, when it comes forward; becauſe the order is then oftentimes but with difficulty re-formed, particularly if the enemy be in ſight.

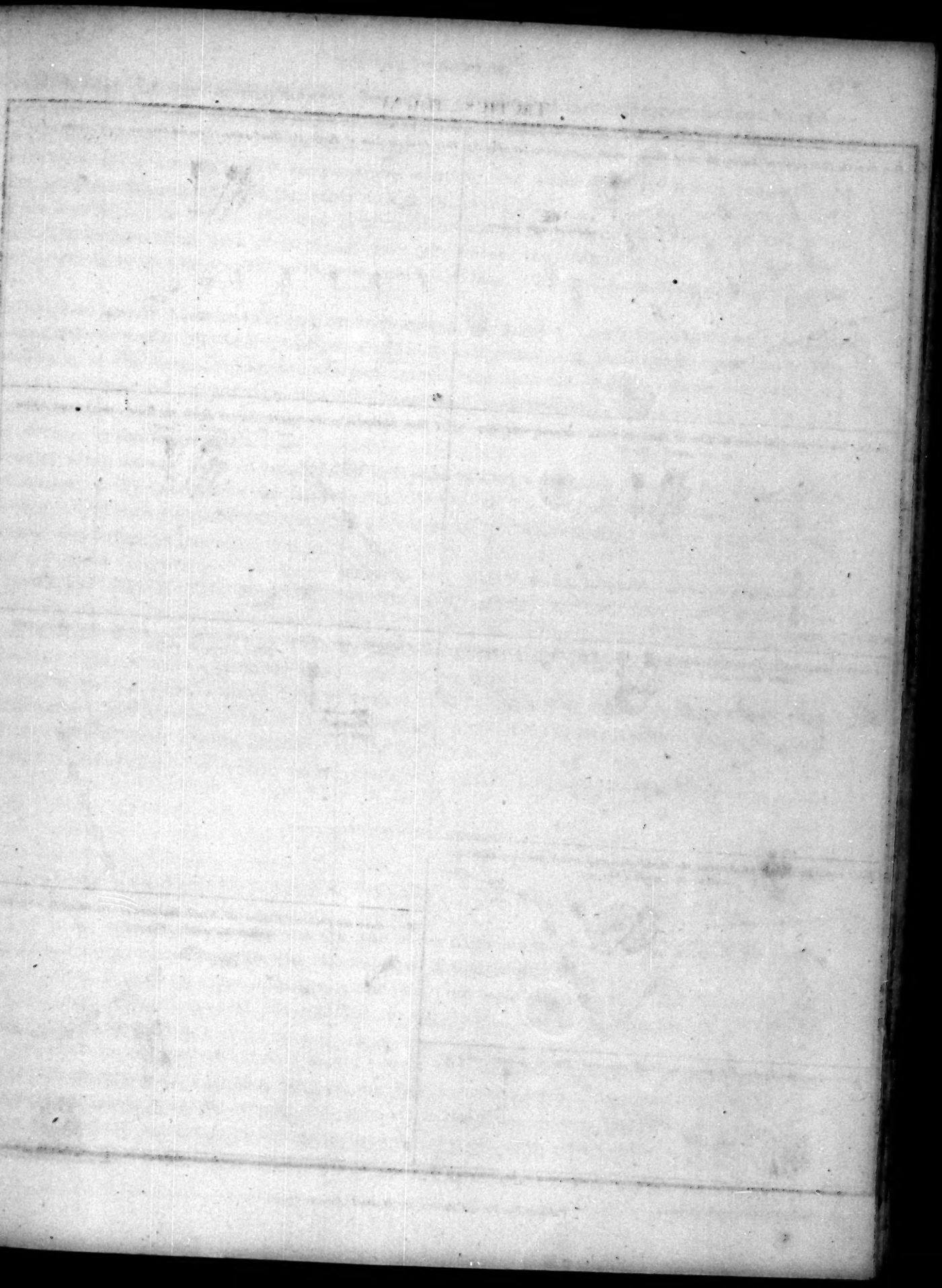
IF THE WIND COMES FORWARD FROM ONE TO SIX POINTS, [Tactics, pl. XV. fig. 85.] and it is intended to keep the fleet on the ſame tack, each ſhip having fallen off, the whole line brings to, except the headmoſt ſhip, which immediately bears away a certain number of points. This number of points is known, by deducting from 8 (being one fourth of the compaſs) one half of the points which the wind has changed: thus, if the wind has come forward 4 points, deduct 2 from 8, and 6 points will remain, as the number which the ſhips are to run large. The headmoſt ſhip then, having fallen off, and bore away, the ſhip which follows her fills and bears away, as ſoon as ſhe brings her leader to bear on the cloſe-hauled line; all the ſhips of the line proceed ſucceſſively in the ſame manner: and, at length, they altogether haul their wind in the wake of their leader, when they get upon the cloſe-hauled line with the ſternmoſt ſhip, which then fills and ſtands on cloſe-hauled, not being under the neceſſity of bearing away.

If the fleet do not bring to, it may be executed thus: [Tactics, pl. XV. fig. 86.] The ſhips fall off: the headmoſt ſhip, having bore away the certain number of points before mentioned, (or elſe ſteering on a courſe perpendicular to the new cloſe-hauled line, upon which the order is to be re-formed,) will haul her wind when the ſternmoſt ſhip ſhall bear from her on the cloſe-hauled line. In the mean time every ſhip, keeping her wind, will ſucceſſively place herſelf in the wake of her ſecond a-head, and follow her manœuvres in bearing away and ſpringing her luff. The ſternmoſt ſhip will, at length, find herſelf in line of battle, without bearing away at all. This is an expeditious and convenient method of re-forming the line, eſpecially when the line is not formed in cloſe order.

A third method.—The van ſhip may get on the other tack, [Tactics, pl. XV. fig. 87.] while the reſt of the ſhips ſtand on together, and tack in ſucceſſion in the wake of their reſpective ſeconds a-head; and the headmoſt ſhip may commence the re-tacking in ſucceſſion, before the whole line has completely tacked. The headmoſt ſhips muſt, however, obſerve to leſſen ſail, while the ſternmoſt muſt proportion theirs to the diſtance they have to run. This evolution is not calculated for execution in the preſence of an enemy, if near; becauſe it would expoſe the line to be cut and traverſed.

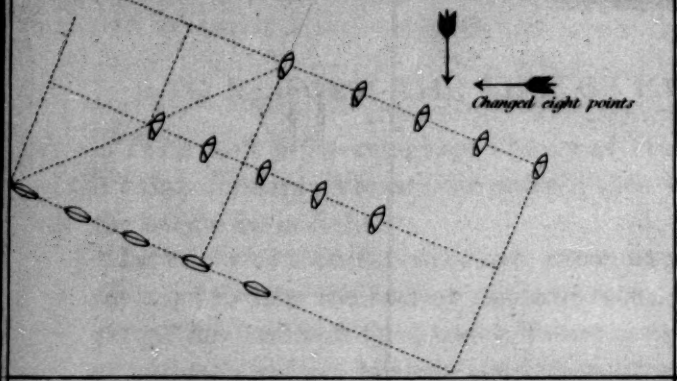
A fourth method.—[Tactics, pl. XV. fig. 88.] The whole line tack together, and go in bow-and-quarter line; the rear ſhips obſerving to preſs ſail, and the headmoſt ſhips leſſening theirs, till the fleet is on the cloſe-hauled line of bearing for the other tack; when they re-tack together. The order will probably be too open, and therefore attention muſt be paid to the diſtances, after the fleet have re-tacked.

A fifth method.—All the fleet are to veer round at the ſame time, having their heads towards the exact oppoſite point of the compaſs from their former courſe. Then the rear ſhip, which is now become the van, is to veer and haul cloſe by the wind on the ſame tack as ſhe did before, the reſt of the ſhips performing the ſame manœuvre in ſucceſſion. This evolution ſoon re-forms the line, but it

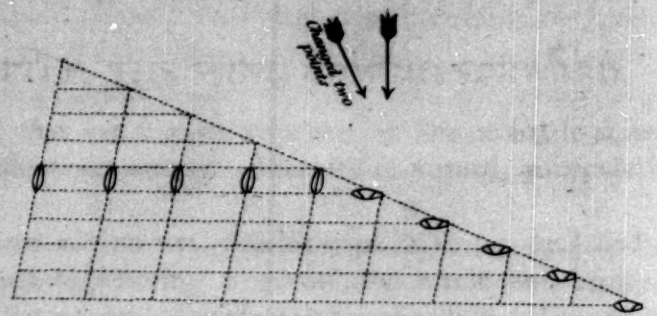


TACTICS.—Plate XV.

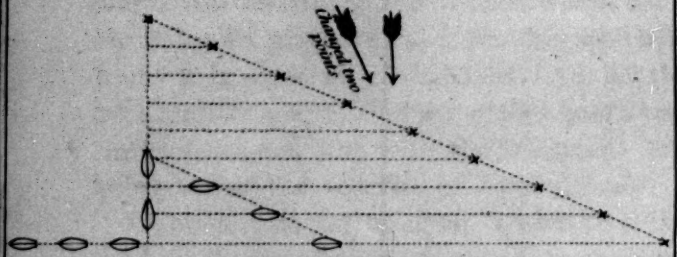
To re-form the Fifth Order of Sailing, the wind coming exactly eight points aft.—Fig. 84.



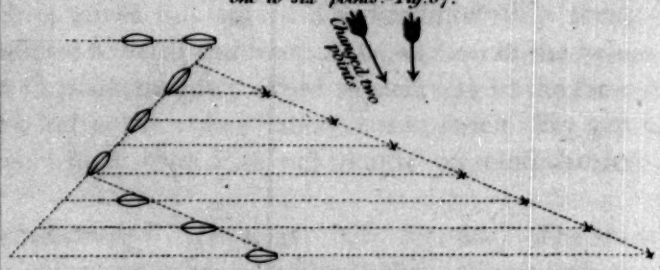
To re-form the Line of Battle, the Wind coming forward from one to six points.—Fig. 85.



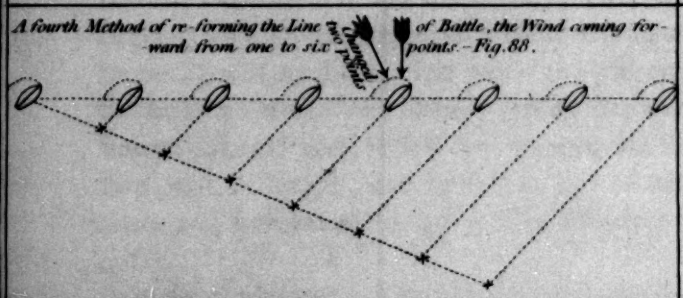
Another Manner of re-forming the Line of Battle, the Wind coming forward from one to six points.—Fig. 86.



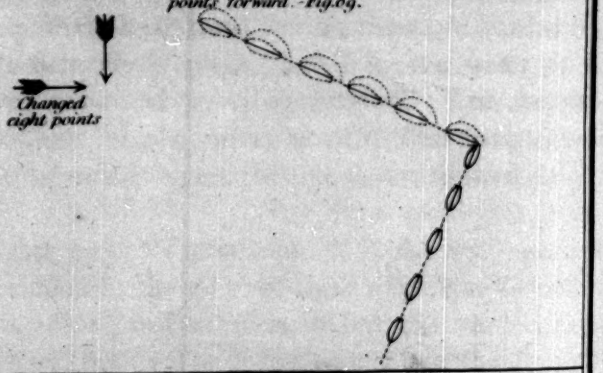
A Third Method of re-forming the Line of Battle, the Wind coming forward from one to six points.—Fig. 87.



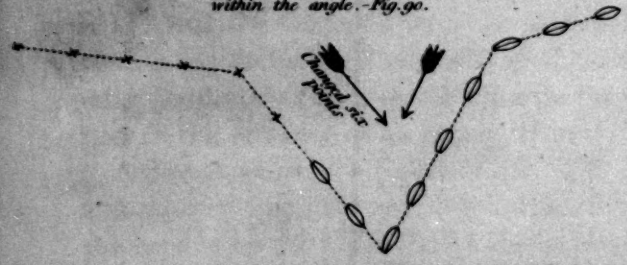
A fourth Method of re-forming the Line of Battle, the Wind coming forward from one to six points.—Fig. 88.



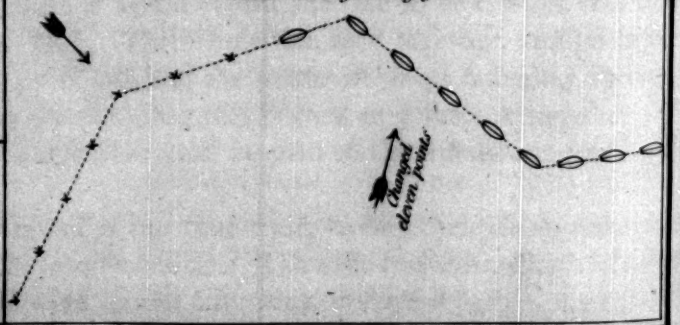
To re-form the Line of Battle upon the same Tack, when the Wind shifts eight points forward.—Fig. 89.



To re-form the Order of Retreat, the Wind changing much, but not blowing within the angle.—Fig. 90.



To re-form the Order of Retreat, the Wind changing so considerably as to blow within the angle.—Fig. 91.



To re-form the Order of Retreat, the Wind changing sixteen points.—Fig. 92.

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inverts the van and rear: it may however be performed in urgent circumſtances, ſuch as to get a-breaſt of an enemy who wiſhes to avoid an engagement, to double a cape in plying to windward, or to avoid ſome danger.

IF THE WIND COMES EXACTLY FOUR POINTS A-HEAD, the whole fleet is to veer round till the heads of all the ſhips come upon the other tack to the point exactly oppoſite to their former courſe; and the rear ſhip (now become the van) is to run four points large upon that tack, the reſt of the fleet follow in ſucceſſion; and, when the laſt ſhip (the former van) is got in the wake of the head-moſt in the line, all the fleet is to veer together, and the order will be re-formed on the former tack.

TO RE-FORM THE LINE OF BATTLE ON THE OTHER TACK IN A SHIFT OF WIND FROM ONE TO SIX POINTS FORWARD, all the ſhips of the fleet are to veer round, till their heads come to the oppoſite point of the compaſs from their former courſe; and then the rear ſhip (now the van) is to haul cloſe by the wind on that tack: the other ſhips haul in ſucceſſion. This would place the fleet more to windward than the preceding; and from this they might paſs, by veering in ſucceſſion, to the line of battle on the former tack.

IF THE WIND COMES A-HEAD MORE THAN SIX POINTS AND LESS THAN TWELVE, the fleet, changing the tack, will manœuvre in the ſame way as if it had come a-head not more than ſix points. In this ſituation, if two fleets are in ſight, the advantage of the weather gage will be gained by the fleet that was before to leeward. But,

TO RE-FORM THE ORDER OF BATTLE UPON THE SAME TACK, WHEN THE WIND SHIFTS EIGHT POINTS FORWARD, the ſhips are to veer round all together, till their heads are on the point of the compaſs oppoſite to their former courſe. [Tactics, pl. XV. fig. 89] Then the rear ſhip, having become the van, is to haul cloſe by the wind on the ſame board: all the other ſhips are to haul in ſucceſſion, and range in the wake of the leading ſhip.

IF THE WIND CHANGES A-HEAD TWELVE POINTS EXACTLY, the fleet need only change their tack, and the order is not diſturbed: but, if it were neceſſary to preſerve the tack, the fleet muſt veer round together, and haul their wind in ſucceſſion on the firſt tack.

Should the wind change more than twelve points, it cannot then be ſaid to come forward.

TO RE-FORM THE LINE OF BATTLE, THE WIND COMING AFT.

IF THE WIND HAS SHIFTED BUT A LITTLE, the leader hauls his wind, while the ſeconds go under an eaſy ſail, ſteering a little large for the main maſt of the preceding ſhip.

If it be intended to change the tack, the whole fleet tack together; and then the ſternmoſt, becoming the leader, hauls up, and the reſt bear down, ſteering for each other's main maſts, and forming reſpectively a-ſtern.

IF THE WIND COMES AFT FOUR POINTS, the whole tack together; and the line is re-formed on the other tack immediately. By this, however, the van becomes the rear; an expedient neceſſary on many occaſions to ſave time and keep to windward. Indeed if it change only two or three points, the fleet may, by tacking together, and ſpringing their luffs in ſucceſſion after the van ſhip, (which was before the rear,) be readily re-formed on the other tack.

IF THE WIND COMES AFT MANY POINTS, the leader of the van hauls his wind; the reſt ſtand on large (as they muſt neceſſarily find themſelves upon the changing of the wind); and, as they arrive in the wake of their leaders, they ſeverally haul up. This evolution, which is very ſimple, is advantageous to a fleet having the lee gage, and wiſhing to engage with or come nearer to the enemy; it may even ſometimes gain the wind, by all the ſhips crowding ſail as they ſpring their luffs.

IF THE WIND CHANGES SIXTEEN POINTS, all the ſhips brace about for the other tack immediately; by which means the fleet will be ſailing four points large: then the ſhips tacking or veering inſtantly altogether, the order of battle will be re-formed on the ſame tack as they were before the ſhift of wind. This evolution is advantageous, both becauſe it is quickly executed, and becauſe it keeps the fleet as much to windward as poſſible. But, if keeping to windward be not an object, the whole fleet ſhift the tack, brace about, and fill: the leading ſhip hauls cloſe, makes ſail, and the reſt follow in ſucceſſion.

TO RE-FORM THE ORDER OF RETREAT, THE WIND CHANGING.

IF THE WIND CHANGES BUT LITTLE, the order is eaſily recovered, if the ſhips of both wings keep reciprocally a-breaſt of each other on a line, perpendicular to the direction of the wind, and in line of bearing with the angular ſhip.

IF THE WIND CHANGES MUCH, BUT WITHOUT BLOWING WITHIN THE ANGLE FORMED BY THIS ORDER, [Tactics, pl. XV. fig. 90.] the leader of the lee wing hauls his wind, (doubling his wing outwards,) and is followed in ſucceſſion by the ſhips of that wing. The ſhips of the weather wing ſtand altogether for the angular ſhip; and thus the ſhips of the weather wing, as they ſucceſſively arrive at the angular point, will bear away after the lee wing; and haul in ſucceſſion at the point where the lee wing began the evolution. When the leader obſerves that the center ſhip is right a-ſtern, he bears away four points, and is followed in ſucceſſion by his wing: and, when that center ſhip is arrived at the angular point of the preſent lines of bearing, the evolution is completed. This evolution, as well as the next, is performed merely by the whole following the leading ſhip; and the whole ſtopping on the arrival of the center ſhip at the angular point.

IF THE WIND CHANGES SO CONSIDERABLY AS TO BLOW WITHIN THE ANGLE FORMED BY THIS ORDER, [Tactics, pl. XV. fig. 91.] the lee leader hauls his wind on the tack which he can take ſooneſt; and the fleet, ſtanding on their reſpective lines of bearing, move in the wake of the lee leader. When the leader perceives that the center ſhip has gained the line right a-ſtern of him, he bears away four points, and is followed by his wing when the center ſhip is arrived at the angular point of the preſent lines of bearing, the evolution is completed; and the proper courſe may be directly ſhaped.

IF THE WIND CHANGES EXACTLY SIXTEEN POINTS, although the neceſſity of re-forming the order of retreat can ſcarcely occur, it may be done in either of the two following ways. Firſt: the fleet veer round, head and ſtern; the admiral brings to at the angular point, while the two wings run right before the wind, to bring to ſucceſſively on their reſpective lines of bearing, and conſequently to leeward of the admiral: the ſhips near the extremities of the wings muſt carry more ſail, according to the diſtance they have to run. The ſecond method of performing it is this: [Tactics,

pl. XV. fig. 92.] The fleet all fall off (ſuppoſe to port); the ſhips of the wing on the larboard ſide of the admiral haul cloſe to the wind with all ſails ſet, and bear away four points in ſucceſſion in the wake of their leader; while the ſhips of the ſtarboard wing run four points large on their own line, till they haul their wind in ſucceſſion in the wake of the firſt wing, which is now moving off: ſo that, when the laſt ſhip of the ſtarboard wing of the former order ſhall have hauled cloſe, (the center ſhip being conſequently on the angular point of the preſent lines of bearing,) the evolution is compleated; but the ſtarboard wing is now become the larboard.

IN WHAT THE FORCE OF A FLEET CONSISTS.

THE principal ſtrength of a fleet conſiſts in good order and diſcipline. Thence reſult an exact obſervance of ſignals and a prompt execution of manœuvres.

A line of battle is ſtrong in proportion to its cloſe order, provided a proper regard is paid to the leaving of ſufficient room for working the ſhips. If the ſhips of a line are not ſo cloſe as thoſe of the enemy, many of them muſt have to ſuſtain the fire of two ſhips; and of courſe a dangerous inferiority will thereby ariſe.

Many advantages reſult from large ſhips and heavy metal. Firſt, in caſe of boarding, large ſhips poſſeſs a manifeſt ſuperiority from their height, which facilitates to them the execution of this manœuvre, while it impedes the execution of it by a ſmaller ſhip upon a larger. Secondly, in heavy ſeas and bad weather, the large ſhips can more commodiouſly and with greater ſafety uſe their lower tier of guns than ſmall ſhips can: and, if the roughneſs of the weather ſhould compel both to keep their lower tier cloſe, ſtill the three-decked ſhip will have the advantage of two tiers to one, as it before had three to two. The ſame advantage they likewiſe have, in caſe of the upper deck being incumbered by ſhattered rigging, &c. in the uſe of their middle deck guns. Large ſhips too have greater ſolidity, reſiſting better the attack, and living better in tempeſtuous weather. In general, large ſhips ſail better than ſmall, notwithſtanding the prejudice of opinion in favour of the latter; but ſuch preference ſhould be underſtood only in light airs of wind, and in the quickneſs of their movements; for, in ſtiff gales, when the ſeas begin to riſe, large ſhips will obviouſly have the advantage. Fireſhips ſucceed leſs againſt large than ſmall ſhips; becauſe the heavier metal of the firſt is more likely to ſink them than thoſe of the latter; and becauſe the larger boats of the great ſhips are more likely to ſucceed in towing them ſafely off.

A fleet that is compoſed of a greater number of large ſhips, though fewer in number, need not be ſo cloſely arranged as that of the enemy: for, though leſs numerous, it may yet be ſtronger. A fleet whoſe line is not ſo cloſe works, in ſome circumſtances, more eaſily than the cloſer fleet; and, if leſs numerous, its movements are quicker, the ſignals better obſerved, the order more exactly kept, and the whole leſs liable to ſeparation. As the ſmaller fleet is more eaſily worked, it follows, of courſe, that

a ſhift of wind cannot diſorder or embarraſs it ſo much as a more numerous fleet: and it alſo follows, that it can work with greater eaſe and expedition to or from the enemy, may keep at a greater diſtance from or approach nigher to a ſhore, and with leſs hazard.

From theſe facts, therefore, we may conclude, that a fleet, compoſed of a greater number of capital ſhips, will be found to be of greater force than a more numerous fleet of ſmaller ſhips. Effective power does not conſiſt wholly in numbers; although a certain proportion of ſecond and third rate ſhips are highly neceſſary for a line of battle.

ADVANTAGES AND DISADVANTAGES OF FLEETS TO WINDWARD AND TO LEEWARD.

AS fleets never engage but in oppoſite lines cloſe to the wind, one of the lines muſt neceſſarily be to windward of the other. Each of theſe ſituations poſſeſſes advantages and diſadvantages; what are peculiar to either we ſhall here diſcuſs.

THE ADVANTAGES OF THE FLEET TO WINDWARD. The fleet which has the weather gage of the other, has the advantage of determining the time and diſtance of the action; they may board if they think proper, and follow the enemy cloſe whenever he gives way; they may eaſily traverſe the enemy's line, ſend fireſhips to their diſabled veſſels, and detachments to cut off the van or rear of the fleet to leeward; finally, they are never annoyed by the fire or ſmoak, as the wind carries it to the enemy.

THE DISADVANTAGES OF THE FLEET TO WINDWARD are an inability to quit the fight, when once engaged, without being obliged to paſs through the enemy's line, which is extremely dangerous; becauſe, being already very much injured ſince they are obliged to fly, they muſt expect to be ſtill more ſo; and, as they have no longer in their power to form the order of retreat, this manœuvre is abſolutely a deſperate one. If the fleet to windward tack all together in order to get off, the line to leeward may do the ſame, after having raked the weather ſhips in ſtays, and follow them on the other tack, with the advantage of having gained the wind of the center and rear diviſions of the flying line. If it blows freſh, it is ſeldom that weather ſhips have their lower deck guns ſufficiently elevated; whence it reſults that the ſhip being a little inclined on her ſide, the guns often run out again at their ports, after being fired, which very much retards the ſervice of the artillery, ſince the guns are obliged to be bowſed in again every time for loading: and oftentimes they can make no uſe at all of their lower tier. Another diſadvantage is, that ſuch of the ſhips as are ſo diſabled as to be obliged to quit the line, cannot eaſily do it, becauſe in veering, for want of being able to tack, they fall between the two lines, where they are raked a-head, and by that means compleatly put in diſorder. But, ſhould they be fortunate enough to be able to finiſh their evolution, it is ſtill very difficult for them, diſabled as they are, to get to windward of their line; and very often they fall foul of the next ſhips a-ſtern of them, which have it ſcarcely in their power to prevent that accident, on account of the fire and ſmoak, eſpecially if the line is much contracted: and, ſhould theſe perceive it, and try to avoid being run foul of by falling back on their next ſhip a-ſtern, and ſo on thus ſucceſſively; it might happen, that from one to the other a great part of the fleet being obliged to manœuvre, their fire would leſſen, and very often ceaſe, by their covering each other; when the diſorder increaſes, and all is loſt, if the enemy take advantage of this critical moment.

But theſe inconveniences may be partly prevented, by having the diſabled ſhips quickly towed out of the line by the boats of the fleet, which, for that very purpoſe, ſhould always be hoiſted out from each ſhip before the engagement begins. Otherwiſe, if the ſhips in the weather line, not being too cloſe, have the neceſſary ſpace to obſerve what paſſes a-head of them, and to manœuvre, they ought to range themſelves to leeward of the diſabled veſſel, in order to cover her, and approach nearer to the enemy; all the other ſhips bearing up alſo together to preſerve the line.

THE ADVANTAGES OF THE FLEET TO LEEWARD. The fleet on the lee gage have the advantage of ſerving with facility and effect their lower deck guns, in all weathers proper for fleets to come to action: they can quit the engagement at pleaſure: their diſabled ſhips are at liberty to leave their ſtations without difficulty, if neceſſity requires it; thus they find themſelves under cover by the reſt, where they may ſoon be aſſiſted by the frigates. In this poſition, they can form the order of retreat with more promptitude, or continue the action as long as convenient. In ſhort, the lee line of battle can alſo, if ſuperior in number, double the enemy, by making ſome of the ſhips in the van or rear to tack, and put one of the extremities of the enemy's line between two fires; and, if they are formed in time, they may cannonade the enemy while bearing down to the attack.

THE DISADVANTAGES OF THE FLEET TO LEEWARD. Its diſadvantages are, being very much annoyed by the ſmoak, and a continued ſhower of fire from the wads falling on board, repelled by the wind; which, if not attended to, may be productive of very great accidents. The ſhips of the line to leeward cannot attempt to board thoſe of the other, whatever may be their inclination for it: they can hardly do more than accept the battle, without being able to determine either time or diſtance. It is but with a great deal of difficulty they can avoid being boarded, or prevent their line being broken, if the weather ſhips are bent upon doing it; and their fire-ſhips very ſeldom are of uſe.

A general rule for the adoption of either the weather or lee gage cannot be laid down. Accident often ends our choice; but the ſtrength of his fleet, the object of his enterprize, the ſtate of the weather, and various other circumſtances, will regulate the conduct of a commander in chief in his preference of one to the other.

TO DISPUTE THE WEATHER GAGE WITH THE ENEMY.

BEING in line of battle and to leeward of an enemy of whom you wiſh to get the weather gage, your fleet is to be kept on the oppoſite tack to that of the enemy; becauſe, in that poſition, they will be obliged to edge very much away, ſhould they be inclined to come to action, and, by that means, they may loſe the advantage of the wind.

If your enemy perſiſts in keeping to windward, without coming to action, they will be obliged to keep upon the ſame tack with you, to prevent your getting into their wake, or doubling them by paſſing a-head and to windward, unleſs the whole of the weather fleet be abſolutely excellent ſailers, which is very rare, though not impoſſible. However, as fleets in general ſail nearly upon an equality, it will be impoſſible for the lee fleet to force the other to action, without a ſhift of wind; which is a very common event, which every ſucceeding inſtant may bring about.

The lee fleet may turn to windward, and purſue the enemy according to the principles of chaſing, by tacking all at the ſame time, as ſoon as the center ſhip brings the middle veſſel of the weather line

exactly on her beam, in order to join them by the ſhorteſt means poſſible, without, however, deviating from the order of battle, or ſailing on one line.

IF THE WEATHER FLEET BE IN ORDER OF BATTLE, AND THE WIND DRAW A-HEAD, the lee fleet, if they be a-head and in order of battle, ought to box off on the ſame tack as before, in order to tack in ſucceſſion in the wake one of another, to reſtore the order of battle, drawing at the ſame time a great deal to windward: this manœuvre may even be the means of weathering the enemy, if the wind ſhould ſhift much: for, they have no other method to regain the order of battle, without loſing much ground; though they will always loſe a great deal with reſpect to the poſition of the enemy to leeward.

IF THE LEE FLEET BE A-STERN, AND THE WIND SHIFTS AFT, WHILE THEY ARE ON THE CONTRARY TACK WITH THE ENEMY IN ORDER OF SAILING ON ONE LINE, the lee fleet ought to tack or veer all together, and at the ſame inſtant; becauſe this ſhift of wind will be a-head for all the ſhips, in reſpect to their tacks then on board, and a-ſtern in reſpect to the order of battle. When the van ſhip is full on the other tack, as well as all the reſt in their former order of battle, ſhe ſhall haul by the wind, while the reſt of the fleet run large on their firſt line of battle as many points as the wind has ſhifted aft, to get into her wake ſucceſſively, and reſtore the order of battle while approaching the enemy, by which they may gain the wind of him, or elſe double him if the ſhift has been great: for, the only means they have of reſtoring the line of battle is by the van ſhip hauling by the wind, and the reſt coming into her wake in ſucceſſion. If the ſhift of wind was four points, the fleet to leeward would be obliged ſtill to perform the ſame manœuvre, that they might go about, after a certain time, ſucceſſively to windward of the enemy, who could only in the mean time have tacked all together, to bring their fleet ſuddenly in a line of battle on the other board.

IF, WHEN THE WIND SHIFTS AFT, THE LEE FLEET IS A-STERN IN ORDER OF BATTLE, AND THE ENEMY BE ON THE OTHER TACK IN THE ORDER OF SAILING, the leading ſhip muſt haul cloſe to the wind immediately, while the other veſſels will in ſucceſſion bear away as many points as the wind has ſhifted, in order to perform the ſame manœuvre and reſtore the line of battle. By obſerving this mode of manœuvering, you will approach the enemy, and gain as much to windward of him as poſſible, or get even the weather gage of him entirely, if the wind has ſhifted conſiderably. The rear ſhip of the fleet to leeward may immediately keep cloſe to this new wind on the ſame board, while all the reſt of the fleet, after having tacked together and at the ſame time, will come and place themſelves cloſe by the wind in her wake, where they are again to tack ſucceſſively, in order to follow their rear ſhip, which is now become the leader, and which may break the enemy's line, or at leaſt gain the wind of him, But, to be able to go through this evolution, you muſt have nothing to fear from the enemy; for, the fleet will be obliged to go about twice before the order of battle can be reſtored. The weather fleet ought to keep their wind as cloſe as poſſible, holding the enemy always exactly to leeward of them, by keeping on the ſame tack as he; and if the wind ſhifts a little, and becomes favourable to the enemy which is to leeward, the weather ſhips are then to keep exactly their wind, without caring for the preſervation of the line, unleſs the two fleets be abſolutely very near one another.

TO AVOID COMING TO ACTION WHEN TO WINDWARD.

THE weather fleet (unleſs the wind changes) having it always in their power to preſerve their advantage, can but with difficulty be forced to action; becauſe they may always hold the board on which they moſt recede from the enemy; while the fleet to leeward muſt run in the order of ſailing on one line, or in order of battle on the other tack, until their admiral have the center ſhip, or admiral, of the weather line, right a-breaſt of him, and perpendicular to his courſe, in order to tack all together and follow the weather fleet by the principles of chaſing. For, if the lee fleet ſtand on one tack till they can weather the retreating fleet, they will ſoon be out of ſight, ſince fleets in general ſail nearly with equal celerity.

The weather fleet may fly off in order of battle on the ſtarboard or larboard tack, while the lee fleet purſues them in the ſame manner, that is to ſay, in order of battle likewiſe and on either tack. But when they come to go about, they are to hold the order of ſailing. If the lee fleet is ſo much ſuperior to the weather fleet, as to be able to form a detachment of fine ſailing ſhips, in a ſufficient number to attempt any thing, let it be done; then this ſquadron is to chaſe the flying enemy to windward, in the ſame manner as one ſingle ſhip chaſes another over which ſhe has the advantage in ſailing; while the remaining part of the ſuperior fleet will uſe every poſſible effort to get to windward, as we ſaid before.

By this manœuvre, the detachment of the ſwift-going veſſels having joined the enemy, will harraſs and diſturb their movements, beſides keeping them in ſight of the reſt of the fleet, which will then have the ſuperiority in ſailing; for, when you are engaged in an action, or when ſome of your ſhips are diſabled, it is impoſſible to manœuvre properly unleſs ſuch ſhips be abandoned; and then it becomes impoſſible to get out of ſight of a ſuperior fleet which takes that reſolution.

If the conſtancy of the winds could be depended upon, the weather fleet might, with impunity, preſerve their advantage in preſence of the enemy, were he not ſufficiently ſtrong to detach a ſquadron of ſuperior ſailers. But, as nothing is more frequent and common than the variation of the wind, it is always beſt to keep as far as poſſible out of ſight of a powerful adverſary, when you do not find yourſelf abſolutely in a ſituation to fight: and, on the contrary, the fleet inclined to come to action ought to keep in ſight and as near as poſſible, keeping always on the ſame board as the enemy, in order to catch the opportunity of the firſt ſhift of wind to force him to battle.

TO AVOID COMING TO ACTION WHEN TO LEEWARD.

THE lee fleet, which is wiſhing as much as poſſible to avoid an engagement, ought to form the order of retreat, to fly from the enemy if they are in view of him, and run on the ſame tack as their chaſer. But, if he is yet out of ſight, and they have intelligence of his approach by their frigates, which are looking out, they may run large from the hoſtile fleet, without confining themſelves to keep the wind exactly aft, unleſs they be in the order of retreat.

There are circumſtances when the lee fleet may run with the wind aft, without aſſuming the order of retreat; as, for example, when they wiſh to gain time, or come to action upon the enemy perſiſting obſtinately in his purſuit of them. Theſe extraordinary caſes excepted, a fleet never

ought to fly before the enemy, without being in the order of retreat, as the rear is then in the beſt ſituation to extricate themſelves in caſe of accident.

TO FORCE THE ENEMY TO ACTION WHEN YOU ARE TO LEEWARD.

IT has already been made evidently appear that, when you are in preſence of the enemy, an engagement is almoſt unavoidable. The lee fleet, which is wiſhing to come at any rate to action, have therefore, in that caſe, need of nothing but patience; for, in keeping always on the ſame tack with the weather fleet, and taking care to have them ſo exactly a-breaſt as to prevent the leaſt danger of loſing ſight of them, you are ready to take advantage of the firſt favourable ſhift of wind to make the attack.

Night is certainly the time when an alteration of courſe may beſt be attempted. But, the lee fleet is to have frigates on the look out, which, by ſignals, will continually give notice of the manœuvre and courſe of the retreating fleet to windward, which, by theſe means, is always expoſed to be purſued without being able to get off unſeen, and muſt, ſooner or later, be compelled to come to action, unleſs they can get into ſome port, or a gale of wind ſhould come to reſcue them by diſperſing both fleets, and thus furniſh the means of retreating in a ſtorm.

TO BEAR DOWN ON THE ENEMY AND FORCE HIM TO ACTION.

IF the lee fleet keep cloſe to the wind in order of battle, with the deſign of bringing the weather line to action, the fleet to windward are to ſtand on in the ſame manner till they are a-breaſt of the enemy; then, they are all together, and at the ſame time, to bear away, and ſteer exactly ſo as to bring their reſpective opponents, in the adverſe line, on the ſame point of the compaſs with them, obſerving the principles of chaſing, which are to be obſerved by every chaſer to windward. Thus the fleets will ſoon be near enough to begin the action; and the bow of each ſhip being preſented to her opponent, in the order of ſailing, will be eaſily changed for the line of battle, by all the ſhips hauling cloſe to the wind together, in the moment which precedes the beginning of the action.

The fleet to leeward, inclined to engage, might bring to, to prevent loſing time; as, by this manœuvre, leſs time will be requiſite for the weather fleet to join them: then they will fill as ſoon as the action begins, becauſe it is more favourable to a lee line to be advancing a-head; ſince, if a ſhip be diſabled in the weather line (which is obliged to follow with the top-ſails full), ſhe will infallibly drop, and run foul of the next veſſel a-ſtern of her, covered with fire and ſmoak, which may be productive of great diſorder.

As the lee fleet fill and ſtand on cloſe by the wind, it is neceſſary that the weather line ſhould be a-breaſt and parallel to the other, before they bear away to come within the requiſite diſtance for

action; in order that the van ſhip of the weather fleet ſhould always keep to windward of the leading ſhip of the lee line, and be guarded againſt ſuch a ſhift of wind as might come a-head; which would not be the caſe if they were a-ſtern of the van ſhip in the lee fleet, which, as well as the reſt of the line, would be able then to double them to windward, by tacking in ſucceſſion.

Another reaſon for the weather line being right a-breaſt of the enemy to leeward, and for every ſhip ſteering on the ſame point in approaching her opponent in the leeward line of battle, is, that the fleets may be placed exactly parallel to each other; for, as the weather line muſt not be a-ſtern, becauſe of the riſk of the winds coming more forward, neither muſt they be a-head of the line to leeward, leſt the wind ſhould come more aft; for then, the lee fleet keeping cloſe by the wind in the wake of their leading ſhip, might, by this ſhift, be as far to windward as the oppoſing fleet, or even get the weather gage of them.

But, if the weather fleet keep exactly a-breaſt of the other, they will always be in a ſituation to preſerve their advantage, without expoſing themſelves. It is, notwithſtanding, certain that thoſe ſhips keeping more away than the line to leeward, will find themſelves, when come within gun-ſhot, in a very diſagreeable ſituation, with reſpect to the enemy's ſhips, which will have it then in their power to rake them as they bear down. This may occaſion much diſorder among the ſhips of the weather line, which for that moment have it not in their power to fire their whole broadſide at the enemy, who has the advantage of beginning the action.

If the lee fleet bear away four points, to move their order of battle on the other tack and avoid the action, filing off in ſucceſſion in the wake of the van ſhip; the weather line, by bearing away all together eight points, cannot fail (both fleets being ſuppoſed to ſail equally) to paſs through the middle of their line, and force them to fight with diſadvantage, if their extent be double the diſtance between the two fleets; for, if they be leſs numerous, they will not be ſo ſoon engaged, becauſe it will be more difficult to cut off any part of them than if the line had four leagues extent, and the diſtance between the fleets only two. A fleet, whoſe extent ſhould not exceed two miles, would (ſuppoſing an equality of ſailing) be able to file off in one half of the time the other would take to join them; but the weather fleet would ſtill have approached them two miles.

If the lee fleet bear away four points all together, being of equal extent with the line to windward, and their diſtance from each other equal to half the length of one of the files, ſhould the weather fleet bear away at the ſame time eight points, they will approach very near, it is true, the ſtern-moſt of the retreating fleet; but they will not have it in their power to cut any of that fleet off, even with an equality of ſailing: ſo that the only advantage gained by this manœuvre will be an ability of attacking the rear, and bringing it to action.

If the van ſhip and the reſt of the weather fleet had a ſufficient velocity to keep the center ſhip of the lee line on the ſame point of bearing; in that caſe, the leading ſhip may break through the enemy's line about the middle ſhip of the center diviſion; for, ſuppoſing the fleets in order of battle, on the ſtarboard tack, ſteering Eaſt with the wind at S S E, being at two leagues diſtance from each other, both the files being four leagues in extent; the lee line bearing away altogether four points large, will run N E, while that to windward, bearing away all together eight points, will ſteer North, the van ſhip of which will keep the center diviſion of the lee line on the point of bearing N W: as ſhe is ſuppoſed to be able to continue in this poſition, it follows, the van of the weather file muſt cloſe the center of the flying line to leeward, after having run four leagues. The time and diſtance neceſſary to cut off a retreating fleet may always be known, according to the laſt ſuppoſition; becauſe,

by the bearing of the two ſhips from the van to the center, we have the baſis of a triangle which will be completely formed by the two courſes ſteered by theſe two ſhips, and in which two angles and one ſide at leaſt will always be known; which is full ſufficient to find the reſt, and conſequently to judge the diſtance to be run before cloſing the enemy.

Should the lee fleet get upon the other tack, and run large, ſtill preſerving the order of battle, they will be ſtill ſooner cloſed, and forced to action by the weather fleet, who have only to keep away from eight to nine points on the ſame tack, or run right before the wind.

The weather fleet can always force the lee one to action, whatever movements they make: for, if they run with the wind right aft, in order of battle, they cannot (ſuppoſing an equality of ſailing) avoid being cloſed, or broken nearly about the center by the weather line, which has only to ſteer two points on each tack nearer the wind than the retreating fleet. So that the rear of the weather fleet, having bore away no more than eight points, will find, at the end of a certain time, to have approached extremely near the center of the retreating fleet, and, in a ſhort time more, will be able to bring their rear to action.

The weather fleet have yet another advantage; becauſe, as their ſhips have the wind on the quarter, they ſail with greater celerity than thoſe of the lee fleet, which run before the wind. The lee fleet being abſolutely determined to fly, has therefore no other expedient left to prolong time, but to combat in the order of retreat, right before the wind, or on the ſame courſe as the purſuing fleet; for, other advantages are not to be relied on, if purſued by a victorious foe.

If, from all that has been ſaid, it reſults that it is not poſſible for a fleet of equal force to avoid an action, how then muſt it be with one much inferior? The more numerous has nothing to do but to form a detachment of ſuperior ſailers, which will chaſe ſtrait before them and begin the action, while ſome others approach to finiſh it. Whence we may conclude that, when in preſence of too powerful an enemy, it will never be poſſible to avoid an action, if he is determined to come to one.

TO DOUBLE THE ENEMY WHEN SUPERIOR TO HIM, AND TO LEEWARD OF HIM.

THE lee fleet, having the ſuperiority in number, ought to endeavour to range exactly a-breaſt and parallel to the weather file, ſo that the van or rear may extend beyond their line, in order to overreach them, by tacking in ſucceſſion to double to windward their van or rear, and bring them between two fires. Provided this manœuvre be properly executed, it will be impoſſible for the ſhips in the weather line, thus preſſed, to continue long in their poſts; for, there is no veſſel cloſely attacked by two others of equal force which can long reſiſt being overcome; ſince it is always in the power of one of them to get into ſuch a poſition as to be able, without much danger on her ſide, to deſtroy the enemy in a very ſhort time.

But whether the moſt advantageous evolution is to double the van or the rear, is neceſſary to be conſidered; for both the one and the other have, in reality, ſo conſiderable an advantage, that either of them may in a very little time determine the fate of a battle.

If the fleet with which you are engaged be to windward, either the van or their rear may be doubled; but the van may with the greateſt facility; becauſe, if they are engaged by the ſhips a-breaſt of

them, thoſe which are advanced a-head will be able, by making all ſail, to get on the perpendicular to the direction of the wind with the van of the enemy, and tack in ſucceſſion to gain the wind of them on the other board, thus keeping them to leeward: and, when they are come ſufficiently to windward, they are again to go about, in order to keep the two head-moſt ſhips of the enemy's line continually under their fire. If there be two or three ſhips to tack in ſucceſſion and gain the wind of the enemy, they may edge down on the van of the weather line at pleaſure, keeping themſelves a little to windward of it; and, as that van-guard is already engaged by the other ſhips a-breaſt on the other ſide, ſhe muſt neceſſarily be ſoon diſabled. If they bear away, they muſt drop upon the line with which they are engaged to leeward, while the ſhips to windward ſtill continue to cannonade them. If they attempt going about, in order to attack more cloſely the ſhips to windward, they will be raked, while in ſtays, by their opponents to leeward and to windward, who pouring into them whole broadſides, which they cannot return, muſt abſolutely compleat their diſorder. If they make ſail in order to fruſtrate the deſign of the ſhips inclined to double, thoſe with which they are engaged a-breaſt to leeward have only to perform the ſame manœuvre, and keep them under their fire; while the others, after having haraſſed them as much as poſſible, will do their beſt to perform the ſame manœuvre on the ſucceeding ſhips.

The captains deſtined to double the enemy ought to be men of known ability as well as of approved courage. They ſhould not be ordered upon that expedition but in weather fit for ſailing at the rate of three knots an hour: and, for the greater promptitude and certainty of ſucceſs, none but the beſt going ſhips are to be employed in that ſort of manœuvre.

If any of the ſhips in the van of the weather line happen to be diſabled in their maſts or yards, as will moſt probably be the caſe after having been between two fires, they will drop a-ſtern and run foul of the next which follows, and theſe again of their ſubſequent comrades; at laſt, diſorder will become prevalent, by ſhips running foul of each other, or manœuvring to avoid the ſame accident; ſo that the order of battle will be broke, while, on the other hand, the line to leeward is preſerved with all the advantage poſſible. The ſhips which have gained the wind of the enemy will, by continuing their manœuvre, augment the confuſion, engaging, however, no more than they like: and if, by chance or misfortune, they ſhould be crippled, it will not certainly be an eaſy matter for them to extricate themſelves. But as they may, on the other tack, drop a-ſtern to windward of the enemy's line, or veer again like him, they muſt extricate themſelves as well as they can, and always advantageouſly enough, if, by doubling the van-guard, they are able to throw it into diſorder.

If the rear of the lee fleet be extended beyond the ſtern-moſt ſhip of the weather line, they will be obliged, if they want to double the rear of the enemy to windward, to make ſail and tack in ſucceſſion; in which manœuvre, the head-moſt ſhip of thoſe deſtined for this ſervice is to go about firſt: then, continuing to keep up a briſk cannonade as they come to the wind, they will go and heave about again a little to windward of the rear of the enemy, in order to bring their ſtern ſhips between two fires; and, ſhould they have the good fortune to oblige them to bear away, they muſt go on ſucceſſively from one ſhip to another, as long as they find they ſucceed in forcing them to give way. Should diſorder take place in the rear of the weather fleet, it will not be near ſo prejudicial to the enemy as if it had happened in the van; on the contrary, it may turn out to be of ſome advantage to them. But the veſſels combating to windward can eaſily withdraw from the fight, by backing a-ſtern, when they find themſelves too hard preſſed.

Ships diſmaſted, or even deprived of the uſe of a topſail in the weather line, cannot, without great riſk, retire from the order of battle (when under neceſſity to do ſo), nor paſs to windward of their rear, in order to refit; for, veſſels ſo circumſtanced cannot ſtay; and even if they could, their ſtern would be for a great while expoſed to the enemy, who, in that poſition, would ſoon render them motionleſs, by compleatly deſtroying the little rigging they had left.

If ſuch ſhips be obliged to veer, that manœuvre making them approach nearer the enemy, they cannot avoid preſenting their head to their opponent, a ſituation ſo dangerous, that little more is wanting to compleat their total deſtruction. But, ſuppoſing them able to finiſh their evolution, they will not have it in their power to paſs to windward of their ſecond a-ſtern, without running foul of her: for the diſtance of one hundred fathoms between the ſhips is not ſufficient to give a diſabled veſſel, which has dropt above fifty fathoms to leeward in veering, ſufficient time to gain to windward the diſtance neceſſary to paſs a-head of the ſhip which immediately follows. Nothing but boats can therefore aſſiſt her, by towing, to get under cover: and yet that will not be executed without undergoing a very heavy fire from the enemy. If it be a van ſhip which is diſabled, being doubled to windward by one or two of the lee line, it will be impoſſible for her to diſengage herſelf: for, the two ſhips which have gained the wind of her will not leave her, nor ſuffer her to receive the leaſt aſſiſtance from the boats or frigates which may be ſent to her relief; and ſhould the fleet ſhe belongs to bear away and paſs to leeward of her, which is the only manœuvre they have to execute in theſe circumſtances, the diſabled ſhip will be ſacrificed, they being unable, without the utmoſt difficulty, to give her the ſmalleſt aſſiſtance; for, every ſhip is engaged by the opponent which is a-breaſt of her, and the leaſt remiſſion of their fire, by fighting on the other ſide to aſſiſt, as they paſs, the diſabled ſhip, would give the lee enemy a decided advantage.

TO DOUBLE THE ENEMY WHEN TO WINDWARD OF HIM.

THE ſhips of the weather line, having extended their van beyond that of the lee line, are to veer, in order to bring the head-moſt ſhips of the enemy's line between two fires. But, let them do as they will, there never can reſult ſo much advantage from this manœuvre as when doubling a fleet to windward, becauſe the diſabled ſhips can always veer with facility. True it is, they cannot fail becoming at the ſame time the prey of the enemy; for, both thoſe which have doubled them, and thoſe with which they are engaged a-breaſt in the weather line, will always have it in their power jointly to preſs as cloſe upon them as they think proper.

If the ſhips which have doubled the van of the lee fleet, with which they are engaged, be diſabled, they will be obliged, as they cannot make ſail, to paſs along the lee line; and they cannot eſcape being totally deſtroyed, if they do not bear away before the wind to get out of gun-ſhot; during which manœuvre they cannot avoid being ſtill in a very diſagreeable ſituation.

Should the ſtern-moſt ſhips of the weather fleet be diſabled, in doubling the enemy's rear, they have only, if they want to extricate themſelves, to drop a-ſtern, and let the two fleets advance a-head; and, after having refitted themſelves, they will re-aſſume their poſts.

It has been propoſed, to avoid being doubled by a fleet ſuperior in numbers, to leave ſpaces in the length of the line, or to place the ſhips at ſuch a diſtance from each other, as to render the length

of the inferior line equal to that of the ſuperior. But neither of theſe manœuvres, nor any other of the ſort which might be contrived on that ſubject, will ever be of ſervice, if the opponents poſſeſs ſkill and ability; for theſe will always diſpoſe their ſhips in ſuch a manner, that ſeveral ſhips of the inferior fleet will receive the fire of many at once, and will conſequently be obliged ſoon to give way.

TO FORCE OR TRAVERSE THE ENEMY's LINE.

THIS is a manœuvre the lee fleet may execute to gain the advantage of the wind. It is performed by the van ſhip, if within gun-ſhot, tacking when ſhe and the center ſhip of the weather line are on a perpendicular to the direction of the wind: then all the lee fleet tack in ſucceſſion, and thus may paſs through the center of the enemy's line, or perhaps a little more towards the enemy's van, and go about again in ſucceſſion to windward of him. But as he will not be long, without doubt, before he performs the ſame manœuvre, he will thus be able to regain the wind, if you do not force him to give way under your fire before his evolution is finiſhed. The enemy to windward may even cauſe his van ſhip to tack, as well as the reſt of the van-guard to follow in ſucceſſion, as ſoon as the leading ſhip of lee fleet ſhall have paſſed through his line and be ready to go about, by which means he will bring them between two fires. This manœuvre, well executed, might perhaps give no little trouble to the ſhip attempting to force the line.

This evolution may be performed with advantage, if, by ſome accident or fault in the manœuvring, the center diviſion of the weather line be ſeparated from their van or rear. For example, when the center diviſion to windward is incumbered with diſabled ſhips, then thoſe of the center diviſion to leeward are, with all ſails ſet, to tack in ſucceſſion, and force with promptitude through the weather fleet, to augment their diſorder, leaving their own van diviſion to engage that of the enemy on the other tack.

TO PREVENT THE LINE BEING FORCED.

WHEN the lee fleet go about in ſucceſſion, in order to traverſe the enemy, the whole line to windward are to tack together and at the ſame time, to get upon the ſame board as the enemy, who will neither be able to join nor to traverſe them

To perform this evolution with advantage, you muſt let ſome of the van ſhips of the traverſing fleet paſs to windward, then go all rapidly about, in order to put and keep them between two fires; thus you may ſucceed in deſtroying them, without their own fleet being able to give them any effectual aſſiſtance.

It is eaſy to perceive, from what has been ſaid, that there is little occaſion to fear being traverſed, as ſuch a manœuvre may turn to be more prejudicial than advantageous to thoſe who perform it. Nevertheleſs, it may and ought to be put in practice when the weather fleet leave ſuch vacancies between their diviſions as to allow ſome ſhips of the lee fleet to be inactive. In this caſe, the ſhips

which are without opponents a-breaſt of them are made to tack, with all ſails ſets, in ſucceſſion, and paſs through theſe intervals of the weather line, in order to double the center diviſion, or any other part of it, and bring it between two fires; while the other ſhips which are a-breaſt, and on the other ſide of it, cannonade from to leeward.

TO BRING A FLEET TO AN ANCHOR.

A CONSIDERABLE fleet ought to anchor in three parallel lines, at the proper diſtance which the length of the columns generally require. The ſhips being a hundred fathoms from each other, in the line of their head-moſt ſhip, which is to be on one of the cloſe-hauled lines of bearing; the van and rear of the columns are to correſpond with each other exactly in the direction of the wind, that they may with eaſe get under way, and form the order of battle with facility, ſo as to be able to diſpute the weather gage with the enemy, if there ſhould come one. As this evolution is to be performed in moderate weather, the fleet being in order on three columns, they are all at the ſame time to bring their ſhips head to wind under their topſails, and let go their anchors together, clewing up the topſails, with all poſſible diſpatch, head to wind; putting the foot of the ſails in the tops, and looſening the ſheets before hauling them down; then veering away an equal quantity of cable, to preſerve their diſtances.

When it blows ſo freſh as to require the topſails being reefed, two cables length diſtance may be kept between the ſhips, and even three if it be likely to blow hard.

If the fleet do not exceed twenty ſhips, they may anchor on one of the lines of bearing, or parallel to the coaſt, in places where trade winds are common, provided they blow in the direction of the land; for, in all caſes, they muſt be in a condition to get under way at the firſt ſight of the enemy, whoſe approach is never to be waited for at anchor; becauſe, if it be dangerous for a ſingle ſhip, it muſt be ſtill more ſo for a fleet, the movements of which are interrupted by the difficulty there is in getting with celerity under way ſhips which are moored, and which, in that caſe, are not much able mutually to ſupport one another, as it is abſolutely requiſite in a fleet.

TO GET A FLEET UNDER WAY.

ALL the fleet being ſhort a-peck, the lee column is to get under way firſt, and bring to all at the ſame time, juſt as they find themſelves after caſting. The center column is then to perform the ſame manœuvre, and caſt likewiſe as ſoon as the other column is brought to; and both columns will remain in that ſame poſition of lying to as the lee column, till the weather column which is ſtill a-peck, having weighed, ſhould be alſo under way.

The three columns may often be got under way all at once: but, to execute this, the fleet muſt all act together, and with equal ardour; for the weather ſhips muſt not at any rate be under way before the lee ones.

If it be neceſſary to get immediately in order of battle, the weather columns are at once to bear away two points together, that they may take their poſts in the line of battle a-head of the lee column.

If the fleet be moored on a line, and head to wind, the rear ſhip may get under way firſt, and haul immediately by the wind; the others in ſucceſſion, from the rear to the van, can eaſily take their ſtation in her wake, ſo that the rear ſhip will become leader.

If the fleet be moored in a line head to wind, they may all get under way at the ſame time; but the van ſhip is to bring to, while the reſt, caſting the other way, would ſtand on by the wind on the ſame tack on which they have caſt, and come to tack ſucceſſively in her wake, to form the order of battle.

If you wiſhed to be more to windward, the fleet having all at the ſame time got under way, and caſt all on the ſame tack, the van ſhip might heave about under an eaſy ſail; and all the reſt, continuing cloſe hauled on the ſame tack they got under way, will come, in ſucceſſion, in his wake, when they are to ſtay. Obſerve, at the ſame time, the rear ſhips are to carry all poſſible ſail.

TO PUT A FLEET IN A POSITION OF DEFENCE IN A ROAD-STEAD.

WHEN a road-ſtead is ſufficiently ſpacious, and the entrance not too much extended, the ſhips are to be moored with ſprings, in two parallel lines from the entrance to the bottom of the bay; the van ſhip ſo near the land that it ſhould be impoſſible for the enemy to paſs between them and the ſhore, and he may be obliged to paſs between the two lines, the van ſhips of which muſt be ſupported by good batteries on ſhore, at the two extremities of the boom, which they muſt take care to have conſtructed from one ſide to the other, when poſſible, or only before the ſhips, if it cannot be done otherwiſe. Beſides this, there ſhould be gun-boats deſtined to poſt themſelves a-head or a-ſtern of the ſhips attempting to force the port. There are alſo to be fire-ſhips moored within the points, that they may be to windward of the enemy after they have got into the port, ſuppoſing them to have been able to force the entrance.

THE EXERCISE OF THE GREAT GUNS.

IN order to render ſeamen expert in the uſe of artillery, they are frequently practiſed in the following exerciſe; which is here introduced, becauſe, without ſkill in annoying an enemy, the moſt able manœuvres may fail in their deſired objects.

Upon beating to arms (every perſon having immediately repaired to his quarters) the midſhipman, commanding a number of guns, is to ſee that they are not without every neceſſary article, as (at every gun) a ſpunge, powder-horn, with it's priming wires, and a ſufficient quantity of powder, ſhot, crow, handſpec, bed, quoin, train-tackle, &c. ſending, without delay, for a ſupply of any thing that may be miſſing; and, for the greater certainty of not overlooking any deficiency, he is to give ſtrict orders to each captain under him, to make the like examination at his reſpective gun, and to take care that every requiſite is in a ſerviceable condition, which he is to report accordingly. And, for the ſtill more certain and ſpeedy account being taken upon theſe occaſions, the midſhipman is to give each man his charge at quarters, (as expreſſed in the form of the monthly report) who is to ſearch for his particular implements, and, not finding them, is immediately to acquaint his captain, that, upon his report to the midſhipman, they may be replaced.

The man who takes care of the powder is to place himſelf on the oppoſite ſide of the deck from that where we engage, except when fighting both ſides at once, when he is to be amid-ſhips. He is not to ſuffer any other man to take a cartridge from him but he who is appointed to ſerve the gun with that article, either in time of a real engagement, or at exerciſe.

Lanthorns are not to brought to quarters in the night, until the midſhipman gives his orders for ſo doing to the perſon he charges with that article. Every thing being in its place, and not the leaſt lumber in the way of the guns, the exerciſe begins with,

1ſt. SILENCE.—At this word every one is to obſerve a ſilent attention to the officers.

2d. CAST LOOSE YOUR GUNS.—The muzzle laſhing is to be taken off from the guns; and, being coiled up in a ſmall compaſs, is to be made faſt to the eye-bolt above the port. The laſhing-tackles at the ſame time to be caſt looſe, and the middle of the breeching ſeized to the thimble of the pomillion. The ſpunge to be taken down, and, with the crow, handſpec, &c. laid upon the deck, by the gun.

When prepared for engaging an enemy, the ſeizing within the clinch of the breeching is to be cut, that the gun may come ſufficiently within-board for loading, and that the force of the recoil may be more ſpent before it acts upon the breeching.

3d. LEVEL YOUR GUNS.—The breech of your metal is to be raiſed ſo as to admit the foot of the bed's being placed upon the axle-tree of the carriage, with the quoin upon the bed, both their ends being even one with the other.

When levelled for firing, the bed is to be laſhed to the bolt which ſupports the inner end of it, that it may not be thrown out of its place by the violence of the gun's motion, when hot with frequent diſcharges.

4th. TAKE OUT YOUR TOMPIONS.—The tompion is to be taken out of the gun's mouth, and left hanging by it's laniard.

5th. RUN OUT YOUR GUNS.—With the tackles hooked to the upper bolts of the carriage, the gun is to bowſed out as cloſe as poſſible, without the aſſiſtance of crows or handſpecs; taking care at the ſame time to keep the breeching clear of the trucks, by hauling it through the rings; it is then to be bent ſo as to run clear when the gun is fired. When the gun is out, the tackle-falls are to be laid along-ſide the carriages in neat fakes, that when the gun, by recoiling, overhauls them, they may not be ſubject to get foul, as they would if in a common coil.

6th. PRIME.—If the cartridge is to be pierced with the priming wire, and the vent filled with powder, the pan alſo is to be filled; and the flat ſpace, having a ſcore through it at the end of the pan, is to be covered, and this part of the priming is to be bruiſed with the round part of the horn. The apron is to be laid over, and the horn hung up out of danger from the flaſh of the priming.

7th. POINT YOUR GUNS.—At this command the gun is, in the firſt place, to be elevated to the height of the object, by means of the ſide-ſights; and then the perſon pointing is to direct his fire by the upper-ſight, having a crow on one ſide and a handſpec on the other, to heave the gun by his direction till he catches the object.

The men who heave the gun for pointing are to ſtand between the ſhip's ſide and their crows or handſpecs, to eſcape the injury they might otherwiſe receive from their being ſtruck againſt them, or ſplintered by a ſhot; and the man who attends the captain with a match is to bring it at the word, "POINT YOUR GUNS;" and, kneeling upon one knee oppoſite the train-truck of the carriage, and at ſuch a diſtance as to be able to touch the priming, is to turn his head from the gun, and keep blowing gently upon the lighted match to keep it clear from aſhes. And, as the miſſing of an enemy in action, by neglect or want of coolneſs, is moſt inexcuſable, it is particularly recommended to have

the people thoroughly inſtructed in pointing well, and taught to know the ill conſequences of not taking proper means to hit their mark; wherefore they ſhould be made to elevate their guns to the utmoſt nicety, and then to point with the ſame exactneſs; and, having caught the object through the upper-ſight, at the word,

8th. FIRE.—The match is inſtantly to be put to the bruiſed part of the priming; and, when the gun is diſcharged, the vent is to be cloſed, in order to ſmother any ſpark of fire that may remain in the chamber of the gun; and the man who ſpunges is immediately to place himſelf by the muzzle of the gun in readineſs.

9th. SPUNGE YOUR GUN.—The ſpunge is to be rammed down to the bottom of the chamber, and then twiſted round, to extinguiſh effectually any remains of fire; and, when drawn out, to be ſtruck againſt the out-ſide of the muzzle, to ſhake off any ſparks or ſcraps of the cartridge that may have come out with it; and next, it's end is to be ſhifted ready for loading; and while this is doing, the man appointed to provide a cartridge is to go to the box, and by the time the ſpunge is out of the gun, he is to have it ready.

10th. LOAD WITH CARTRIDGE.—The cartridge (with the bottom end firſt, ſeam-downwards, and a wad after it) is to be put into the gun, and thruſt a little way within the mouth, when the rammer is to be entered; the cartridge is then to be forcibly rammed down, and the captain at the ſame time is to keep his priming-wire in the vent, and, feeling the cartridge, is to give the word *home*, when the rammer is to be drawn, and not before. While this is doing, the man appointed to provide a ſhot is to provide one (or two, according to the order at that time) ready at the muzzle, with a wad likewiſe, and when the rammer is drawn, at the word,

11th. SHOT YOUR GUNS,—The ſhot and wad upon it are to be put into the gun, and thruſt a little way down, when the rammer is to be entered as before. The ſhot and wad are to be rammed down to the cartridge, and there have a couple of forcible ſtrokes, when the rammer is to be drawn, and laid out of the way of the guns and tackles, if the exerciſe or action is continued; but if it is over, the ſpunge is to be ſecured in the place it is at all times kept in.

12th. PUT IN YOUR TOMPIONS.—The tompions to be put into the muzzle of the cannon.

13th. HOUSE YOUR GUNS.—The ſeizing is to be put on again upon the clinched end of the breeching, leaving it no ſlacker than to admit of the guns being houſed with eaſe. The quoin is to be taken from under the breech of the gun, and the bed, ſtill reſting upon the bolt, within the carriage, thruſt under, till the foot of it falls off the axle-tree, leaving it to reſt upon the end which projects out from the foot. The metal is to be let down upon this. The gun is to be placed exactly ſquare, and the muzzle is to be cloſe to the wood, in it's proper place for paſſing the muzzle laſhings.

14th. SECURE YOUR GUNS.—The muzzle laſhings muſt firſt be made ſecure, and then with one tackle (having all it's parts equally tight with the breeching) the gun is to be laſhed. The other tackle is to be bowſed tight, and by itſelf made faſt, that it may be ready to caſt off for laſhing a ſecond breeching.

Care muſt be taken to hook the firſt tackle to the upper bolt of the carriage, that it may not otherwiſe obſtruct the reeving of the ſecond breeching, and to give the greater length to the end part of the fall.

No pains muſt be ſpared in bowſing the laſhing very tight, that the gun may have the leaſt play that is poſſible, as their being looſe may be productive of very dangerous conſequences.

The quoin, crow, and handſpec, are to be put under the gun, the powder-horn hung up in it's place, &c.

Being engaged at any time when there is a large ſwell, a rough ſea, or in ſqually weather, &c. as the ſhip may be liable to be ſuddenly much heeled, the port-tackle fall is to be kept clear, and (whenever the working of the gun will admit of it) the man charged with that office is to keep it in his hand; at the ſame time the muzzle laſhing is to be kept faſt to the ring of the port, and being hauled tight, is to be faſtened to the eye-bolt over the port-hole, ſo as to be out of the gun's way, in firing, in order to haul it in at any time of danger.

This precaution is not to be omitted, when engaging to the windward, any more than when to the leeward, thoſe ſituations being very ſubject to alter at too ſhort a warning.

A train-tackle is always to be made uſe of with the lee-guns, and the man ſtationed to attend it is to be very careful in preventing the gun's running out at an improper time.

EPITOME OF A GENERAL ENGAGEMENT.

THE whole œconomy of a naval engagement may be arranged under the following heads, viz. the PREPARATION; the ACTION; and the REPAIR, or refitting for the purpoſes of navigation.

The PREPARATION is begun by iſſuing an order to clear the ſhip for action, which is repeated by the boatſwain and his mates at all the hatchways, or ſtair-caſes, leading to the different batteries. As the cannon cannot be worked while the hammocs are ſuſpended in their uſual ſituations, it becomes neceſſary to remove them as quick as poſſible. By this circumſtance a double advantage is obtained: the batteries of cannon are immediately cleared of an incumbrance, and the hammocs are converted into a ſort of parapet, to prevent the execution of ſmall ſhot on the quarter-deck, tops, and fore-caſtle. At the ſummons of the boatſwain, *Up all hammocs!* every ſailor repairs to his own; and, having ſtowed his bedding properly, he cords it firmly with a laſhing, or line, provided for that purpoſe. He then carries it to the quarter-deck, poop, or fore-caſtle, or wherever it may be neceſſary. As each ſide of the quarter-deck and poop is furniſhed with a double net-work, ſupported by iron cranes fixed immediately above the gunnel, or top of the ſhip's ſide, the hammocs thus corded are firmly ſtowed by the quarter-maſter between the two parts of the netting, ſo as to form an excellent barrier. The tops, waiſt, and fore-caſtle, are then fenced in the ſame manner.

Whilſt theſe offices are performed below, the boatſwain and his mates are employed in ſecuring the ſail-yards; to prevent them from tumbling down when the ſhip is cannonaded, as ſhe might thereby be diſabled, and rendered incapable of attack, retreat, or purſuit. The yards are now likewiſe ſecured by ſtrong chains, or ropes, additional to thoſe by which they are uſually ſuſpended. The boatſwain alſo provides the neceſſary materials to repair the rigging, wherever it may be damaged by the ſhot of the enemy; and to ſupply whatever parts of it may be entirely deſtroyed. The carpenter and his crew in the mean-while prepare his ſhot plugs and mauls, to cloſe up any dangerous breaches that may be made near the ſurface of the water; and provide the iron-work neceſſary to refit the chain-pumps, in caſe their machinery ſhould be wounded in the engagement. The gunner, with his mates and quarter-gunners, is buſied in examining the cannon of the different batteries, to ſee that their charges are thoroughly dry and fit for execution: to have every thing ready for furniſh-

ing the great guns and ſmall arms with powder, as ſoon as the action begins: and to keep a ſufficient number of cartridges continually filled, to ſupply the place of thoſe expended in battle. The maſter and his mates are attentive to have the ſails properly trimmed, according to the ſituation of the ſhip; and to reduce or multiply them, as occaſion requires, with all poſſible expedition. The lieutenants viſit the different decks, to ſee that they are effectually cleared of all incumbrance, ſo that nothing may retard the execution of the artillery; and to enjoin the other officers to diligence and alertneſs, in making the neceſſary diſpoſitions for the expected engagement, ſo that every thing may be in readineſs at a moment's warning.

When the hoſtile ſhips have approached each other to a competent diſtance, the drums beat to arms. The boatſwain and his mates pipe, *all hands to quarters!* at every hatchway. All the perſons appointed to manage the great guns immediately repair to their reſpective ſtations. The crows, handſpecs, rammers, ſpunges, powder-horns, matches and train-tackles, are placed in order by the ſide of every cannon. The hatches are immediately laid, to prevent any one from deſerting his poſt by eſcaping into the lower apartments. The marines are drawn up in rank and file, on the quarter-deck, poop and fore-caſtle. The laſhings of the great guns are caſt looſe, and the tompions withdrawn. The whole artillery, above and below, is run out at the ports, and levelled to the point-blank range ready for firing.

The neceſſary preparations being completed, and the officers and crew ready at their reſpective ſtations, to obey the order, the commencement of the action is determined by the mutual diſtance and ſituation of the adverſe ſhips, or by the ſignal from the commander in chief of the fleet or ſquadron. The cannon being levelled in parallel rows, projecting from the ſhip's ſide, the moſt natural order of battle is evidently to range the ſhips a-breaſt of each other, eſpecially if the engagement is general. The moſt convenient diſtance is properly within the point-blank range of a muſket, ſo that all the artillery may do effectual execution.

The ACTION uſually begins by a vigorous cannonade, accompanied with the whole efforts of the ſwivel guns and the ſmall-arms. The method of firing in platoons, or vollies of cannon at once, appears inconvenient in the ſea-ſervice, and perhaps ſhould never be attempted, unleſs in the battering of a fortification. The ſides and decks of the ſhip, although ſufficiently ſtrong for all the purpoſes of war, would be too much ſhaken by ſo violent an exploſion and recoil. The general rule obſerved on this occaſion throughout the ſhip, is to load, fire, and ſpunge the guns with all poſſible expedition, yet without confuſion or precipitation. The captain of each gun is particularly enjoined to fire when the piece is properly directed to it's object, that the ſhot may not be fruitleſsly expended. The lieutenants, who command the different batteries, traverſe the deck to ſee that the battle is proſecuted with vivacity; and to exhort and animate the men to their duty. The midſhipmen ſecond theſe injunctions, and give the neceſſary aſſiſtance, wherever it may be required, at the guns committed to their charge. The gunner ſhould be particularly attentive that all the artillery is ſufficiently ſupplied with powder, and that the cartridges are carefully conveyed along the decks in covered boxes. The havock produced by a continuation of this mutual aſſault may be readily conjectured by the reader's imagination. The defeated ſhip having acknowledged the victor, by ſtriking her colours, is immediately taken poſſeſſion of by the conqueror, who ſecures her officers and crew as priſoners in his own ſhip and inveſts his principal officer with the command of the prize until a captain is appointed by the commander in chief.

The engagement being concluded, they begin the REPAIR: the cannon are ſecured by their breechings and tackles, with all convenient expedition. Whatever ſails have been rendered unſervice-

able are unbent; and the wounded maſts and yards ſtruck upon the deck, and fiſhed or replaced by others. The ſtanding rigging is knotted, and the running rigging ſpliced wherever neceſſary. Proper ſails are bent in the room of thoſe which have been diſplaced as uſeleſs. The carpenter and his crew are employed in repairing the breaches made in the ſhip's hull, by ſhot-plugs, pieces of plank, and ſheet lead. The gunner and his aſſiſtants are buſied in repleniſhing the allotted number of charged cartridges, to ſupply the place of thoſe which have been expended, and in refitting whatever furniture of the cannon may have been damaged by the late action.

Such are the uſual proceſs and conſequences of an engagement between two ſhips of war, which may be conſidered as deſcriptive of a general battle between fleets or ſquadrons. The latter, however, involves a greater variety of incidents, and neceſſarily requires more comprehenſive ſkill and judgment in the commanding officer.

NAVAL TACTICS.

PART THE SECOND.

HAVING, in the preceding part of this ſubject, ſhewn the ſyſtem of Tactics which prevails at the preſent day; we now come to give the deviations from that ſyſtem, which have been propoſed by M. Bourdé de Villehuet.

Not wiſhing to alter the cuſtomary orders of BATTLE and RETREAT, it is only propoſed that a fleet ſhould be, for its common order of ſailing, in what is called the ORDER OF CONVOY. This order (ſays M. Bourdé de Villehuet) is the moſt ſimple, and the only one a fleet ought to be in at all times; becauſe, firſt, it is eaſily preſerved; ſecondly, it cannot be diſcompoſed in twenty out of the thirty-two ſhifts of wind, and is eaſily re-formed in the twelve other changes; and finally, it is eaſy to paſs from that order to thoſe proper for the ſecurity of a fleet, in all poſſible caſes, either to preſerve one's ſelf, to attack, or to defend.

THE ORDER OF CONVOY

IS that which a fleet holds in making a ſtrait courſe, *the ſhips being all in the wake of one another, ſteering on the ſame point of the compaſs, and forming a right line.* If the fleet be numerous, they may be divided into three columns, which are to be ranged parallel to each other, that of the admiral occupying the middle, and ſteering all three the ſame courſe. Thus it may be obſerved that the order of convoy diſregards a line of bearing; and this is its eſſential difference from the firſt and fifth orders of ſailing.

TO FORM THE ORDER OF CONVOY IN ONE LINE.

WHEN the fleet is in no particular order of ſailing, the leading ſhip is to veer ſufficiently for the others to get in her wake and ſteer the ſame courſe ſhe holds. Generally, it is the commanding officer who takes this poſt, when the ſquadron is not numerous.

That the order may be the ſooner formed, every ſhip of the fleet or ſquadron ſhall chaſe at the ſame time that which is to be a-head of her in the line, taking care to manœuvre in ſuch a manner as to avoid running foul of thoſe which croſs her fore-foot in endeavouring to join their leaders in the line. Therefore, ſuch as are to leeward of others ſhall take care not to perſiſt obſtinately in weathering them; but, they muſt back, or go a-ſtern if neceſſary, by keeping away a little more. Such as ſhall already be in the column, and are to be more a-ſtern, muſt bring to till they are in their poſts, or ſtand on under a very eaſy ſail, that each ſhip may contribute to the celerity of forming the order.

TO FORM THE ORDER OF CONVOY IN THREE COLUMNS.

THE leaders of each of the three diviſions are to place themſelves in a line right a-breaſt one of another: and they muſt take care to keep a proper diſtance between themſelves, according to the length of the columns, which will accelerate the progreſs of the diſpoſition. Then every ſhip of each particular ſquadron, chaſing that which is to be next a-head of her, will come and take their ſtations a-ſtern of one another at the rear of the leading ſhip of the diviſion, and ſteer directly after her.

This order, which in the practice is very eaſily held, has the advantage of keeping the fleet cloſe and connected, without cauſing any delay in its progreſs. The beſt ſailers can regulate their velocity by that of thoſe which are inferior to them in ſailing, and, theſe on the other hand may, with a little attention, carry as much ſail as the weather will admit, by which means all imaginable courſes may, without breaking, be ſteered.

TO CHANGE FROM THE ORDER OF CONVOY, IN ONE LINE, TO THE ORDER OF BATTLE, CONTINUING ON THE SAME TACK.

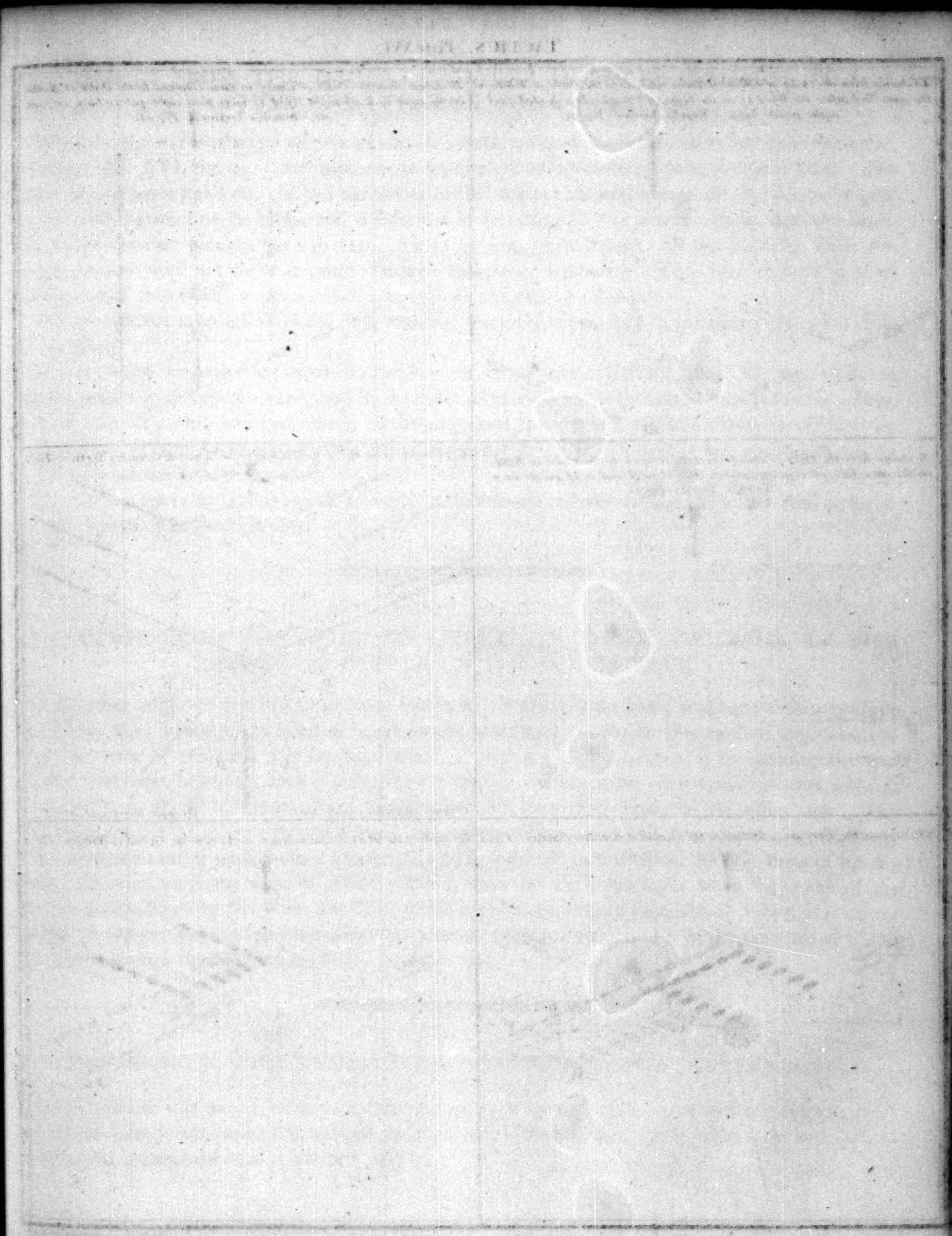
THE headmoſt ſhip is to haul cloſe by the wind on the ſame tack, and the reſt of the fleet are to make the ſame movement in ſucceſſion, obſerving the proper diſtances from each other.

TO CHANGE FROM THE ORDER OF CONVOY, IN ONE LINE, TO THAT OF BATTLE ON THE OTHER TACK.

THE headmoſt ſhip is to veer and to come to the wind on the other tack; then all the veſſels of the fleet are to perform the ſame manœuvre in ſucceſſion.

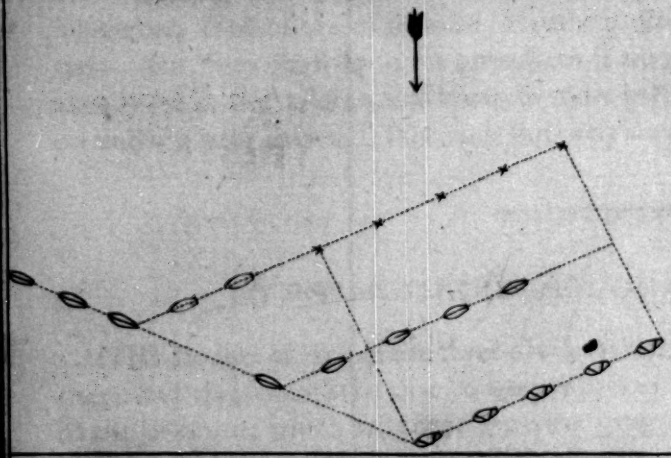
ANOTHER METHOD.—After having formed the order of battle on the ſame tack, as has been ſhewn before, the van ſhip is to tack; and all the ſhips of the fleet are to follow in ſucceſſion, to form the order of battle on the other tack.

ANOTHER METHOD.—If you are ſteering a courſe in the order of convoy, four points large, the order of battle on the other tack may be formed at once, by all the ſhips veering or ſtaying together.

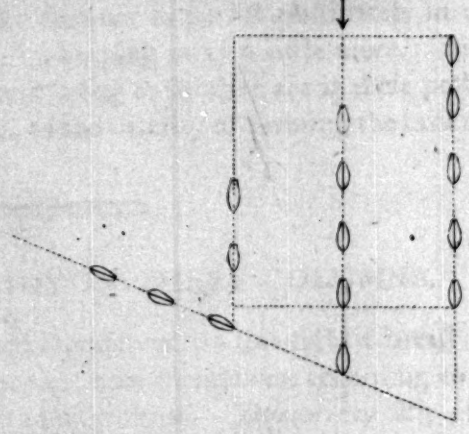


TACTICS.—Plate XVI.

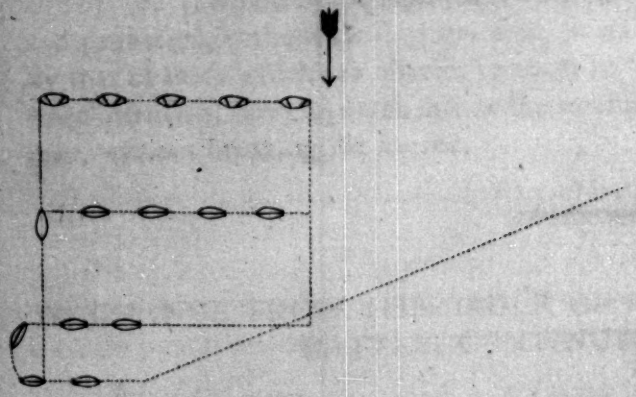
To change from the Order of Convoy in three Columns to the Order of Battle on the same Tack, when the Wind is on the beam, or between close-hauled and eight points large. – Bourdé's Tactics. – *Fig. 93.*



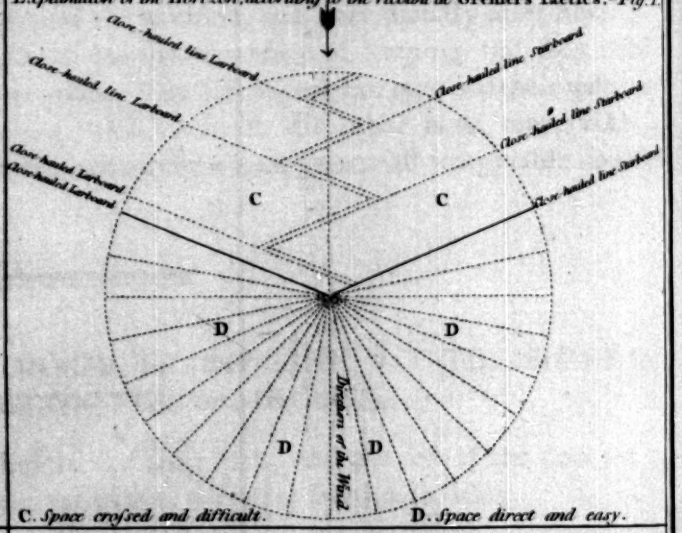
To change from the Order of Convoy in three Columns to the Order of Battle on the same Tack, when the Wind is more than eight points large, or right aft. – Bourdé's Tactics. – *Fig. 94.*



To change from the Order of Convoy in three Columns to the Order of Battle on the other Tack, when going between close-hauled and eight points large – Bourdé's Tactics. – *Fig. 95.*

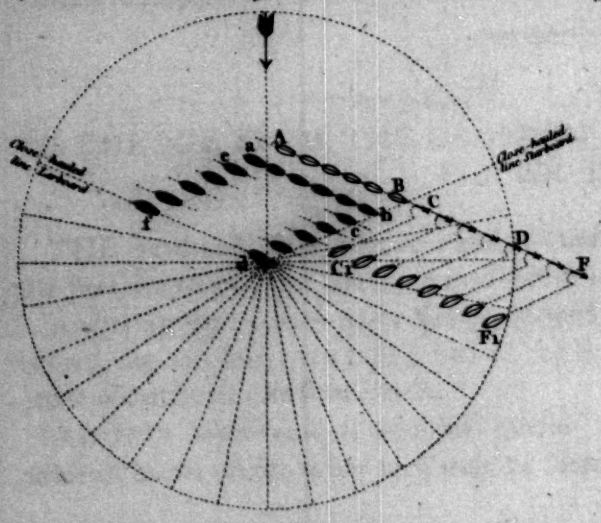


Explanation of the Horizon, according to the Vicount de Grenier's Tactics. – *Fig. 1.*

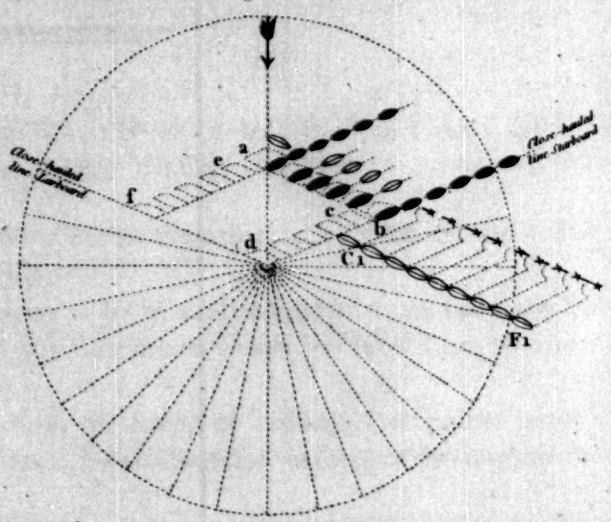


C. *Space crossed and difficult.* D. *Space direct and easy.*

To explain the Horizon, according to the Vicount de Grenier's Tactics. – *Fig. 2.*



To explain the Horizon, according to the Vicount de Grenier's Tactics. – *Fig. 3.*



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TO CHANGE FROM THE ORDER OF CONVOY, IN THREE COLUMNS, TO THE ORDER OF BATTLE ON THE SAME TACK.

IF THE FLEET HAS THE WIND ON THE BEAM, OR BETWEEN CLOSE HAULED AND EIGHT POINTS LARGE, [Tactics, pl. XVI. fig. 93.] the ſhips of the lee column are all to bring to at the ſame time. The other two columns ſtand on. When the leader of the weather column brings the lee leader to bear on the cloſe-hauled line, he tacks, and is followed in ſucceſſion. The centre column does the ſame. But, as the weather column has a greater diſtance to run, it muſt make all poſſible ſail, while the center column need not make ſo much; becauſe the center column is not to begin to haul its wind till the center ſhip of the weather column has got on the cloſe-hauled line.

The lee column is to follow in the ſame manner, when the center ſhip of the center column is cloſe by the wind.

IF THE WIND BE MORE THAN EIGHT POINTS, OR RIGHT AFT, [Tactics, pl. XVI. fig. 94.] the column which is to form the van guard in the order of battle is inſtantly to haul its wind in ſucceſſion, with all ſails ſet; while the two others, continuing their courſe, will put themſelves ſucceſſively by the wind, on the cloſe-hauled line upon which the order of battle is to be formed, and conſequently in the wake of the weather column.

IF THE COLUMNS BE CLOSE ON A WIND, it then becomes a caſe within the uſual fifth order of ſailing, treated of in the firſt part.

TO CHANGE FROM THE ORDER OF CONVOY, IN THREE COLUMNS, TO THE ORDER OF BATTLE ON THE OTHER TACK.

THE fleet might be put firſt in order of battle, on the ſame tack; then, making the ſhips tack in ſucceſſion, they would be in order of battle on the other tack. But, as this method might be too long, the time of evolution may be diminiſhed, [Tactics, pl. XVI. fig. 95.] by making the two weather columns bring to, WHEN SAILING BETWEEN CLOSE-HAULED AND EIGHT POINTS LARGE, while the ſhips of the lee column veer in ſucceſſion and keep their wind on the other tack. The center ſhip of the lee column having veered, the center column is to fill, the leader of which bears away, running exactly with the wind right aft, and is followed in ſucceſſion, by the ſhips of his diviſion, till they are in the wake of the lee column, then on the other tack; when the leader of the center column hauls by the wind, the ſhips of his diviſion hauling in ſucceſſion. When the center ſhip of the center column has bore away, the weather ſquadron manœuvres in the ſame manner, and thereby completes the order of battle.

TO CHANGE FROM THE ORDER OF CONVOY TO THAT OF RETREAT.

WHETHER THE FLEET BE IN THE ORDER OF CONVOY IN ONE LINE OR IN THREE COLUMNS, they are firſt to form in the order of battle on the ſame tack; thence they are to paſs to the order of retreat, in the manner directed in the firſt part.

TO CHANGE FROM THE ORDER OF BATTLE TO THE ORDER OF CONVOY, IN ONE LINE, ON THE SAME TACK.

THE van ſhip is to bear away as far as the intended courſe, and the reſt are to execute the ſame manœuvre in ſucceſſion; ſo that, when the rear ſhip ſhall have made the ſame movement, the evolution will be compleated, and the order of convoy formed on the ſame tack.

TO CHANGE FROM THE ORDER OF BATTLE TO THE ORDER OF CONVOY, IN ONE LINE, ON THE OTHER TACK.

THE van ſhip is to tack and run one point large, till ſhe can bear away, under the ſtern of the rear ſhip, as far as the courſe which the fleet is to hold. All the ſhips are to perform the ſame manœuvre at the ſame points, to change the order and get upon the other tack.

The van ſhip, inſtead of tacking, may veer and run a little time before the wind, before getting on the other tack: then ſhe will heave to the wind on the fleet's courſe, without fear of breaking through the rear. This movement is ſhorter, and to be prefered, ſince the order of convoy is never held to keep by the wind.

TO CHANGE FROM THE ORDER OF BATTLE TO THE ORDER OF CONVOY, IN THREE COLUMNS, ON THE SAME TACK.

THE three leaders of the columns are to bear away together, and ſteer on the intended courſe; then the ſhips of each ſquadron are to execute the ſame manœuvre in ſucceſſion, following the ſame direction; ſo that the three rear ſhips, veering at the ſame time in the wake of their reſpective columns, will compleat the evolution.

The columns will find themſelves too diſtant from each other; but, as there is nothing which diſturbs them, and they have the wind right aft or very large, it will be eaſy for them to cloſe as much as may be neceſſary.

TO CHANGE FROM THE LINE OF BATTLE TO THE ORDER OF CONVOY, IN THREE COLUMNS, ON THE OTHER TACK.

THE three leading ſhips of the columns are to heave in ſtays at the ſame time, and bear away on the perpendicular of the wind on the other tack: then the ſhips of each ſquadron are to perform the ſame manœuvre in ſucceſſion; and, when the rear ſhips ſhall have turned about and be in a line with their reſpective columns, and the leaders of the weather diviſions ſhall, by crowding all the ſails, have come a-breaſt of the van ſhip of the lee ſquadron, the evolution will be compleated.

If the fleet is to ſteer more large than the perpendicular to the wind, it will be eaſily formed, by making the leaders and their columns bear away in ſucceſſion, then putting afterwards the columns at the neceſſary diſtance from each other.

TO CHANGE FROM THE ORDER OF RETREAT TO THE ORDER OF CONVOY, IN ONE LINE.

ONE of the wings is to haul together close by the wind, on the same tack as the line of bearing on which they are formed, in order to bear away in succession at the point of the angle, in the wake of the other wing; the ships of which are to run with the wind four points large, on their line of bearing; and, when the last ship of the weather wing is in the wake of her line, the order of convoy is formed.

If necessary to sail more large, the van ship and the rest of the fleet may bear away more, in succession: or should you not wish to keep away so much, the same ships may keep their wind more, and follow the van ship in succession.

TO CHANGE FROM THE ORDER OF RETREAT TO THE ORDER OF CONVOY, IN THREE COLUMNS.

IT is necessary first to form the order of battle, and to pass from that to the order of convoy in three columns, as just before directed.

TO RESTORE THE ORDER OF CONVOY IN ONE LINE, WHEN THE WIND COMES A-HEAD MORE THAN CLOSE-HAULED.

IT is easy to conceive that the order of convoy cannot be disturbed by all the shifts of wind, as long as it is more abaft than the starboard and larboard lines of bearing; because the ships, steering large in the wake of each other, can easily maintain their posts, having only their sails to trim, whether the fleet be in one line or in several columns. But, if the wind draws more a-head than one of the lines above-mentioned, it is evident, the ships being obliged to veer, or pay off, all at the same time on the same tack, the order will be disturbed. We shall now proceed to give the method to restore it on the same tack, when the fleet is in one line in the order of convoy. If we suppose the fleet steering large on the starboard tack, and the wind come suddenly right a-head, which would immediately throw all the sails flat a-back on their masts, the van ship is to cast instantly to port, and bring to on the starboard tack, while all the rest of the fleet are to box off, all together and at the same time, to starboard, and make all sail, in order to come with celerity close by the wind on the larboard tack, and get into the wake of the van ship, then to tack and take their stations successively under an easy sail, and bringing to likewise till the rear ship, which has a good way to run, be in her post.

Should you wish to get on the other tack, then the van ship is to cast to starboard, to bring to on the larboard tack by the wind; then the rest of the fleet would cast the other way, to tack afterwards successively in the wake of the ship which lies to, and take their station there, as has been said before; with this difference, that, after the restoring of the order, you would find yourself on the larboard tack.

If the ſudden ſhift of wind be not quite a-head, or if it be ſix points, or between ſix and twelve, the van ſhip is, nevertheleſs, to bring to on one tack, while the reſt of the fleet, caſting on the ſtarboard, make all ſail to gain her wake, to tack there, and thus regain their ſtations.

The order of convoy may be reſtored by a ſtill ſhorter and more ſimple method, but which will cauſe the fleet to drop to leeward more than the former does. In the ſame caſe as the laſt, when the wind comes right a-head, the whole fleet is to pay off on the ſame tack, if the ſhips are all on one line, and the rear ſhip muſt bring to, while the reſt of the ſhips, running five points large (if the wind has ſhifted ſix points beyond the direction of cloſe-hauled), will come and bring to ſucceſſively a-head of the rear ſhip on that line of bearing which they are to hold, obſerving that ſuch ſhips are to carry a greater and proportionable preſs of ſail, as, being nearer the van ſhip, have conſequently more way to run before they can regain their poſts.

To know how many points or degrees the weather ſhips have to run large to get into their ſtations, add eight points or ninety degrees to the half of the points or degrees the wind has ſhifted beyond one of the two lines of bearing: and, in regaining your poſts, you will have the quantity of points by which you differ from the firſt courſe you ſteered. For example, if you were ſteering Eaſt, and the wind ſhift to that point of the compaſs, it will have ſhifted ſix points beyond one of the directions cloſe-hauled, which you would have been able to preſerve on the ſame tack; ſo that, adding half of ſix points to eight, you will have eleven points difference from the Eaſt courſe which you ſteered before, and you will conſequently ſail N W by N on one tack, to reſtore the order, or S W by S on the other, to gain your poſts cloſe by the wind in a line with the rear ſhip; which, bearing Weſt before the ſhift of wind, ought now to bear S S W, if cloſe to the wind on the ſtarboard tack, or N N W if poſted upon a bow-and-quarter line on the larboard tack. Therefore, to regain their ſtations in the line, the ſhips run five points large. Had the wind ſhifted four points only, it would have blown E S E; and the ſhips, taking their poſts on the ſtarboard tack, to the N E of the rear ſhip which is lying-to, would have ſteered N N W to fall into their ſtations, and reſtore the order of convoy on the ſame tack.

TO RESTORE THE ORDER OF CONVOY, IN THREE COLUMNS, WHEN DISTURBED BY A SUDDEN SHIFT OF WIND RIGHT A-HEAD.

WHEN the wind ſhifts on a ſudden right a-head, or between the two lines of bearing, the order of convoy is to be reſtored by the whole fleet caſting the ſame way all together, leaving the three rear ſhips of the columns lying-to, cloſe to the wind on the tack on which you purpoſe to continue cloſe-hauled; while the ſhips of the three columns running large all together on a courſe (to leeward of the firſt), which muſt always be determined by half the number of points or degrees the wind has ſhifted beyond the direction of cloſe-hauled, added to eight points or ninety degrees, will bear away with eaſe for their ſtations in the cloſe-hauled line of bearing, which they are to hold to the windward ſide of their rear ſhip; where they will arrive ſucceſſively, by carrying more ſail according as they may be nearer to the van, becauſe in that caſe they have a greater diſtance to run.

OF THE CONVOY OF MERCHANT SHIPS, UNDER THE PROTECTION OF MEN OF WAR.

TO take the requiſite care of a large fleet, there ſhould be in the convoy a number of frigates, which are to be diſtributed a-head, a-ſtern, and on the wings of the fleet, which is always to be kept in the order of convoy on three, four, five, or ſix columns, according to the number it may be compoſed of: ſome other frigates are alſo to be ſent on the look-out, in order to be informed of what paſſes at a certain diſtance, and warned in good time of the approach of the enemy.

If the frigates which are ſent to look out ſhould diſcover an enemy of ſuperior force, they will make it known by ſignal, and perhaps it may be thought adviſable that they ſhould ſteer a different courſe from that of the fleet, in order to deceive the hoſtile ſhips in fight.

The men of war are to hold themſelves in the order of convoy a little a-head and to windward of the weather column of the fleet; becauſe, in that poſition, they will be able with promptitude to attend wherever their preſence may be neceſſary. The frigates will repeat the ſignals from one to another with celerity and exactneſs, that their purport may, with all poſſible expedition, be made known to the commanding officer, who, on the other hand, muſt not neglect to have all ſuſpicious and neutral ſhips chaſed, and even ſtopped, by the frigates about him, and which are always to be ſupported by one or two line of battle ſhips, according to the exigency of circumſtances.

The degree of progreſs which the whole fleet will make will be regulated by that of the worſt-going ſhips, which, however, are to be abandoned when found to cauſe too great a loſs of time; for, ſometimes, it is better to riſk a ſmall loſs than to expoſe the whole by delay.

There will be placed between the columns, ſloops of war, and other ſwift-ſailing light veſſels, to maintain order, and keep the ſhips in their ſtations. Their particular buſineſs will be to get the tardy ſhips to make more ſail, and to oblige thoſe which may be out of their poſt to reſume it; in the evening they will give an account, to the frigates having charge of going the round, of thoſe which have not well manœuvered; and theſe will make their report to the commodore.

During the night the ſame order will be maintained, except with reſpect to the look-out frigates, which are to be called in within a certain diſtance of the fleet, and which are to be allowed lights as well as the reſt of the men of war. They are to be particularly careful to oblige all ſtraggling ſhips to return to the convoy, and to fire, without heſitating, on all ſtrange veſſels coming from the main ſea, in order to give the alarm. Every night they are to be ſupported on the wings by ſome line of battle ſhips.

NAVAL TACTICS.

PART THE THIRD.

WE now come to the Syſtem of Tactics which has been propoſed by the Viſcount de Grenier; and which is certainly a bold innovation upon the tactics of the preſent day.

The additions and alterations of preceding writers did not ſubvert the eſtabliſhed principle, but were accommodated to it. They never thought of altering THE ORDER OF BATTLE: this, however, the Viſcount has done, and conſequently has rendered neceſſary a different mode of evolution.

The productions of an ingenious mind are ſeldom barren of utility; and, although theſe tactics ſhould never be practiſed, ſome of the reaſoning, upon which the old ſyſtem is condemned, and by which the new one is defended, may contribute to improve the art of naval war.

PRELIMINARY REFLECTIONS, AND DESCRIPTION OF A NEW ORDER OF BATTLE.

MANY naval expeditions, three battles in which I* have been perſonally engaged, the analyſis of naval tactics, the attentive peruſal of the journals and accounts publiſhed on the manœuvres of our fleets and on thoſe of our enemies, have made me ſenſible of the neceſſity of improving the art of defence and attack at ſea. My encouragement in this undertaking has been ſo much the greater, as the ſucceſs did not ſeem to me impoſſible.

I have conſidered the art of war by ſea in a new point of view: I have laid down new principles, and have endeavoured to preſent them in a ſuccinct and intelligible manner. Should ſuch officers, as come to a knowledge of them, not coincide with me in opinion, I hope they will do juſtice to my intentions.

Should men of abilities, diveſted of prejudice, analyſe my work, and allow that it may be of ſome utility, it will be a ſatisfaction to me to witneſs, in my life-time, the ſucceſs of ſo pure an intention as mine, the end of which was only to employ my leiſure hours in the inveſtigation of the following objects.

* We have thought it right, in tranſlating this work, to adopt the ſtile of the original, in the uſe of the firſt perſon: we muſt therefore remember that the Viſcount de Grenier is ſpeaking of himſelf.

First, To render ineffectual part of an enemy's forces, in order to collect the whole ſtrength of a fleet againſt thoſe attacking or attacked; and, thereby, to be able to overcome the remaining part with more facility and certainty.

Secondly, Never to preſent to the enemy any part of a fleet without its being flanked; ſo that, were the enemy to attack thoſe parts which hitherto were ever reckoned weak, he ſhould find himſelf even defeated.

The art of war does not conſiſt in the mere bravery and obſtinate intrepidity of individuals; its chief object is to become maſter of the field of battle, to take poſſeſſion of the enemy even while he is able to defend himſelf, or to put him to flight through terror. Thus it is that the glory of a nation may be characteriſed, and the fame of a military corps may obtain immortality.

The NEW TACTICS which I am going to propoſe are naturally calculated to confirm theſe uſeful truths, provided the officer, who commands a fleet governed by my new principles, do not loſe ſight of the eſſential object I have juſt pointed out to him; and if he, accordingly, cauſe the diviſions of that fleet to manœuvre ſo as to draw part of that of the enemy out of the whole body of it, and to keep that detached part to windward: becauſe, in ſuch a poſition, this very part muſt be vanquiſhed by all the united forces of the fleet ranged in the *new* order, before it can be aſſiſted by the remainder of the fleet which would be to leeward. Such is what I propoſe to prove beyond doubt; and I hope this aſſertion will appear ſo much the more juſt, as it will be evident that, in all caſes whatever, the admiral will have no occaſion to perplex himſelf with any more than two poſitions, on both tacks neceſſary for the three ſquadrons of his fleet, and whence reſult four general orders in each poſition. The combination of the movements of theſe orders will produce above 240 different poſitions, or, in one word, all the poſſible poſitions which may enable one to face the enemy with celerity, without diſunion, (even after having been ſeparated) on all the points of the compaſs where that enemy might preſent himſelf, either in attack or defence, to windward or to leeward. Each ſquadron in theſe poſitions, in paſſing from one order to another, would never have any other courſe to make but one of the two cloſe-hauled courſes, or their oppoſite; and in which, finally, theſe ſame ſquadrons might eaſily fall together in order of battle, on one part of the enemy's forces in thoſe ſhifts of wind which often happen during engagements, and which have frequently occaſioned the loſs of a battle to a fleet ranged according to the uſual order.

It appears to me, that the art of war by ſea has not hitherto been conſidered in its true point of view; and that the TREATISES OF NAVAL TACTICS, which have been publiſhed by Father HOSTE, M. DE MOROGUES, M. DU PAVILLON, and others, are of no other ſervice than to teach the manner of ranging the ſhips for battle; but do not lay down the method of attacking an enemy with advantage, or defending againſt him in the beſt manner poſſible.

All the rules given in thoſe treatiſes are reducible to a few principal propoſitions, in which all the ſhips of a fleet are ranged in three columns, or in one line, with the wind aft or large; or ranged on the obtuſe angles of chaſing or retreating; and that they are of no other uſe than to inform us how ſhips are to manœuvre in order to range themſelves in one ſingle line cloſe-hauled, which they have termed the order of battle; and how to paſs from that line to any of the other poſitions before enumerated, which they have called the order of ſailing*, and the order of convoy†. Some Tacticians have conſidered the order of battle in one ſingle line cloſe-hauled, as an order not to

* The Viſcount here alludes to M. Morogues, and

† Here he has in view M. Bourdé, whoſe treatiſe is contained in the ſecond part of naval tactics.

be varied from; notwithſtanding experience has proved, that, if a fleet formed upon that line be divided by a change of wind, by a vigorous attack of the enemy, or by any other cauſe, ſuch ſhips as are ſeparated can no longer act but as ſingle ſhips, which have no more any collective diſpoſition, and with which it is almoſt impoſſible to re-join, ſo as to form a new body, and one ſingle will in the execution of a general manœuvre.

Experience has proved again, that, from any of the poſitions, or orders of ſailing in three columns, according to thoſe tactics, it is impoſſible to paſs to the order of battle within reach of the enemy's ſhot, without giving that enemy an opportunity of breaking into the line which you wiſh to form, if he knows how to avail himſelf of the diſadvantageous poſitions in which the columns muſt be while they are making the manœuvres requiſite for the formation of that line.

Experience proves likewiſe, that, ſhould not the enemy be able to penetrate into the line, while it is forming, he may, after it is formed, throw himſelf with a ſuperior number on one of the parts it is compoſed of, in the van or in the rear, when he himſelf is to windward, and put it to flight*; becauſe the two extremities of that line are always defenceleſs, and, on account of the greatneſs of its extent, it is impoſſible to repair to either of thoſe extremities, in order to defend them, with the ſame celerity as the enemy can who attacks them.

From theſe undeniable truths, it ſeemed to me neceſſary to deviate from the preſcribed rules, in order to find out a more perfect ſyſtem of tactics, wherein all the chief movements of a fleet ſhould bear a relation to its poſitions; wherein all the forces of that fleet ſhould be ſo diſpoſed, that the two extremities of a line of battle had nothing to fear from the enemy; wherein all the ſquadrons might be put in action without any confuſion, either collectively or ſeparately; wherein their ſeparation from each other ſhould no longer be conſidered as a diſadvantage; wherein the movements of each diviſion might be executed within the reach of the enemy's ſhot, at the very moment of the attack, without any riſk of being endangered by his fire; wherein, in ſhort, all the forces of a fleet ſhould be ſo diſpoſed as to be able always to attack with advantage, and to defend in the beſt manner poſſible. This is what has engaged my attention. But, before I deliver my thoughts on that ſubject, I am going to ſhew that the uſual order of battle cannot ſuit either the defence or the attack, and that we are not to look upon it as an invariable ſyſtem, ſince the very author who has laid down and fixed the principles of the tactics now in uſe, and on which all the others have ſince been framed, did not himſelf conſider it as ſuch.

That one order, which offers all the ſhips in a ſingle line cloſe-hauled, ſteering in the wakes of each other, very cloſe, is obſerved with ſo much rigour, that if, during action, the ſhips ſtand not cloſe, and as it were chained together, they are thought to be expoſed to unavoidable defeat; and ſuch perſons as are perſuaded of the neceſſity of this very cloſe order, are alarmed, and even diſconcerted, as ſoon as they perceive the enemy to have penetrated the line. A variety of cauſes may, however, contribute to the breaking of it, without its being in the power of the commander in chief, or of the officers under him, to prevent it, whatever may be their knowledge and preſence of mind; ſuch, for example, as the ſudden unmaſting of ſome ſhips, which, for that reaſon, muſt neceſſarily quit their poſt; a defect in the conſtruction of others, which, falling to leeward much more than the reſt, get out of the line without changing their courſe or their manœuvre, and thereby open a free paſſage to the enemy for dividing the line in every place where ſuch kind of

* The Engliſh have, no doubt, judged rightly of the weakneſs of our line of battle: for, in the various engagements in which I have been during the two laſt wars, they have directed their firſt effort on our rear, and fell upon it without keeping any order. It is even very ſure that the defeat of M. De Conflans was owing entirely to no other circumſtance but that method of attacking his fleet.

ſhips are ſtationed. Another cauſe may be, the ſudden change of wind, which (eſpecially if it veers aft) may offer a favourable opportunity of penetrating the line before its order can be re-eſtabliſhed.

This order of battle is therefore infinitely defective in any caſe of being merely upon the defenſive; ſince nothing more than an unlucky broadſide, the accidental drift of a badly conſtructed ſhip, or a ſudden ſhift of wind, may give an advantage to the enemy.

Nor is this all. That order of battle is defective in a numerous fleet, on account of the communication of the ſignals, and the want of facility in giving ſuch orders as are moſt ſuitable to the poſition of the fleet; for its extreme extent may retard the communication of the admiral's ſignals, and of courſe the execution of his orders; rendering it perhaps even impoſſible; becauſe in ſo remote a point of view, he cannot judge, with preciſion, of the diſtance which is requiſite for each different manœuvre he may order. But let us now conſider that order of battle with reſpect to the attack.

The cloſe dependance of all the ſhips together, from the firſt a-head to the laſt a-ſtern, and which is to render that line the ſtronger for defence, ſuppoſing even that none of its parts ſuffer from any of the accidents above mentioned, gives it an inactivity abſolutely detrimental, when it is to commence the attack.

If the enemy is inferior and reſolves to retreat, he naturally directs his courſe to that point of the compaſs upon which he expects to make the greateſt way. It even happens ſometimes that every ſhip makes ſail without regarding a particular order of ſailing, which might obſtruct her flight; conſequently the attacking fleet cannot reaſonably obſerve the line of battle in chaſing the enemy: for, to come up with him, there is an abſolute neceſſity to croud, like him, all the ſails, and make courſes on ſuch points of the compaſs as the chaſed ſhips ſtand on. In ſuch a caſe, the uſual order of battle is uſeleſs.

If you ſuppoſe the adverſe fleet of equal ſtrength, and diſpoſed to receive your attack, how will you be able to do it with advantage, if you do not fall with a ſuperior number on his rear, in order to try to break his line, or put it into confuſion? And muſt you not, in this caſe, neglect the uſual order of battle?

If, in ſhort, inſtead of falling with a ſuperior number on one of the extremities of the adverſe line of battle, you want to prolong your own line to windward, making a line equal in extent to his, from the firſt ſhip a-head to the laſt a-ſtern; ſo that each ſhip of the two adverſe lines ſhould exactly correſpond with each other; what elſe can be the conſequence of it but an engagement, abandoned to mere chance; an engagement, in which the moſt able commander in chief may not be able to get any general manœuvre executed, to ſave the damaged part of his fleet, but by expoſing another to be deſtroyed, while it executes the evolutions neceſſary for that purpoſe, under the fire of the enemy? Engagements of that kind always remain undecided; becauſe, after many blows given and received, both the commanders end by obſerving each other till night comes on; and the leſs ſtubborn of the two ſeizes that opportunity to ſet off by ſome unexpected manœuvre.

Finally, this order of battle, which may expoſe the attacking fleet to the ſame inconveniences as that which ſtands on defence only, ariſing from the difficult communication of ſignals, ſhift of wind, and the uncertainty of ſufficient ſpace for its manœuvres; which does not permit an attack upon the enemy, with ſuperior advantage, without being forced to diſregard that very order; ſuch an order is as detrimental in the attack as defective in the defence.

I am therefore going to propoſe a *new* order of battle, wherein the fleet, compoſed of three diviſions, will be ranged on the three ſides of a regular lozenge, formed by the interſecting of the two cloſe-hauled lines, inſtead of being in one ſingle line, as in the uſual order of battle; and wherein one of the diviſions will always be ranged in order of battle, while the two others, reſting upon the firſt ſhip a-head, and the laſt a-ſtern of that diviſion, will be formed on the cloſe-hauled line oppoſite, and will ſtand on checquer-wiſe*, (or in bow-and-quarter line,) on the ſame tack as the ſhips which are in line of battle.

In this ſituation the two diviſions, whoſe ſhips will ſteer checquer-wiſe, will ſerve to cover the headmoſt and the ſternmoſt ſhips of the line of battle, to hinder the enemy from penetrating into that line (ſhould he, from the reaſons before deduced, have an opportunity ſo to do); it will ſerve to repel the enemy, were he to attempt to double the rear, in order to place it between two fires; and, finally, they will be able to fall, very readily, on one of the diviſions of the enemy's fleet, and detach it from the reſt, in order to engage that detached part with all poſſible advantage.

EXPLANATION OF THE HORIZON, AND OF ITS PARTS UNDER A NEW DENOMINATION, AS APPLICABLE TO THIS SYSTEM OF TACTICS.

THE circle of the horizon, for any object whatever, changes neceſſarily every time that object changes its place; for the object always occupies the center: and the direction of the wind, which ſeems to be fixed to one particular point of that horizon, changes likewiſe its place ſucceſſively as the object itſelf changes its centre, although in fact the wind continues ſtill to blow from the ſame point of the compaſs with reſpect to that object, when this object does not alter its courſe. Therefore, a ſhip, each ſhip of a fleet, even each individual of that ſhip, or of that fleet, occupies always and neceſſarily

* As I ſhould not be ſurpriſed to hear ſome ſeamen exclaim, that it is very difficult for the ſhips in one line to preſerve their poſts checquer-wiſe, and that it muſt be an obſtacle to the admiſſion of this new ſyſtem of tactics; it will be very eaſy for me to anſwer them thus:

Firſt, that, if that reaſon was a ſufficient one to reject my ideas, it would be a ſtronger motive to reject alſo the uſual tactics; ſince, out of the ſixteen poſitions which ſerve as a foundation to that ſyſtem, there is one half in which the ſhips are ranged checquer-wiſe. Secondly, that it is impoſſible to paſs from any of the remaining poſitions to the order of battle, without the ſhips of each column ſteering checquer-wiſe. But, beſides, as the order of battle has been determined to be on the cloſe-hauled line, and as, on the ſurface of the horizon, the compaſs offers us eighteen courſes large againſt two cloſe-hauled, it is ſcarcely poſſible to make any evolution whatever on all that ſurface, but by following ſome of thoſe large courſes: and one is obliged, ſo as to be able to range one's ſelf as quick as poſſible in order of battle, to ſteer checquer-wiſe on a cloſe-hauled line. This inconteſtible truth being once acknowledged, the objection becomes of no effect; eſpecially if one conſiders that it will be much more eaſy, than it is imagined, to preſerve the checquer-wiſe order, of which I am ſpeaking, as the two diviſions will reſt upon two fixed points, viz. the firſt ſhip a-head, and the laſt a-ſtern of the line of battle; and if each ſhip takes care only to keep, in reſpect to the ſhip next to and to windward of her, ſo as to ſtand in the ſame line and in her wake, if ſhe is on the other tack, they will be ſure to find themſelves in a line of battle after having gone about.

For the remainder, it ſignifies very little whether the ſhip which is to leeward of the other is exactly in the preciſe point of that evolution: ſhe will be in her right place as ſoon as, by turning about, ſhe can ſtand large on the ſhip neareſt to her and a-weather of her; obſerving, however, that the intermediate veſſels of the leeward ſquadron ſhould not over-ſhoot the direction of the wind, with reſpect to the headmoſt ſhip of the ſecond ſquadron; becauſe that is the poſt of the ſternmoſt ſhip of that leeward ſquadron.

Beſides, each of thoſe ſhips manœuvering according to that method, the checquer-wiſe order will eaſily be preſerved; thus no objection of this ſort can be entertained.

the center of an horizon; this is an evident truth. But, to have an adequate idea of the evolutions of ſhips, acting ſingly or collectively, it is neceſſary to conſider that truth as a principle not to be loſt ſight of. Accordingly, I conceive the circle of the horizon as divided into two *unequal*, inſtead of *equal*, parts; [Tactics, pl. XVI. fig. 1.] the one, in which the ſhip, placed in the center of that horizon, may eaſily preſent her head, and ſteer on twenty points of the compaſs by ſailing on all the direct courſes poſſible from the center of the horizon towards all the points of the circumference, from one of the cloſe-hauled lines to the other, by removing gradually from the one as far as the wind right-aft, and by approaching afterward the other cloſe-hauled line as ſhe removes from the wind right-aft. The other part of the horizon I conſider to be that in which the ſhip, placed in the ſame center, cannot preſent her head to more than twelve rhombs of the compaſs, on the ſide of the direction of the wind, when, with the aſſiſtance of the helm and the ſails, ſhe is made to ſhoot a-head on that ſide, without her being notwithſtanding able to move herſelf towards any of thoſe twelve parts of the horizon. For theſe conſiderations I ſhall name the firſt of theſe parts, the *direct and graduated ſpace:* becauſe, in that ſpace, all the courſes poſſible to be ſteered may be marked by degree from each of the two cloſe-hauled lines to the wind right-aft; and that whoever chooſes to go to any of the points marked on that part of the horizon, may ſteer a direct courſe from the center from which he ſails to the point where he wiſhes to go, whatever may be the rhomb on which, in that ſpace, that point may be placed. The ſecond of thoſe two parts I ſhall name the *indirect, croſſed, and ungraduated ſpace*; becauſe, from the ſixth point of the compaſs, on either ſide, to the direction of the wind, a ſhip cannot ſteer from the center to the circumference of the horizon; but, in order to arrive in that part at one of the propoſed points of the ſurface of the globe, ſhe is obliged to follow one of the two cloſe-hauled lines, or both alternately, and ſteer conſequently croſs courſes, which muſt neceſſarily delay her progreſs.

It is from that new diviſion of the horizon into two unequal parts that I ſhall ſhew the true mean of deſtroying the forces of the enemy, and to render engagements deciſive.

For, if we ſuppoſe a fleet ſo diſpoſed that no more than a part of it ſhould be able to fight to leeward, with another fleet equal in number of ſhips, ranged to windward in one ſingle line; as, for example, ſuppoſing that the three ſquadrons of the fleet to leeward ſhould be ranged on three of the ſides of a lozenge [Tactics, XVI. fig. 2.] *a b, c d, e f;* the ſquadron *a b*, which is moſt to windward of all, being drawn up in line of battle, cannot be fought but by an equal number of ſhips A B of the weather fleet A B, C D, F, while all the reſt remain inactive; unleſs the ſhips, which are not engaged, ſhould try to paſs to leeward of the fleet *a b, c d, e f*, which is itſelf already to leeward. But, if thoſe ſhips of the weather fleet thought proper to bear away, is it not very ſure that the remaining ſhips placed from A to B, which are fighting to windward (and which cannot fall off like the other ſhips which are placed from C 1 to F 1), ought, with reſpect to theſe, to be conſidered as a ſquadron placed in that part of the horizon which we have denominated *croſſed* and *difficult*, and to which theſe laſt ſhips are no longer able to repair, unleſs by ſteering alternately the two cloſe-hauled lines; which would infinitely delay the aſſiſtance which the ſhips of the ſquadron A B might ſtand in need of. Now, if, in that caſe, the two other ſquadrons *c d, e f*, of the fleet ranged according to the new ſyſtem, and which did not engage, come to windward and join with the ſquadron *a b*, againſt that of the enemy which is to windward, is it not certain that the ſquadron A B of the enemy, which is to windward, might be deſtroyed, before it can receive any aſſiſtance from the remainder of the fleet which is to leeward, from the point C 1 to the point F 1?

I think, therefore, that the great art of war at ſea ought to conſiſt chiefly in endeavouring, by ſtratagem, or by the nature of the evolutions, to draw or keep to windward a part of the adverſe fleet, and to be able to collect all one's forces againſt that part. It is an inconteſtable principle; and it is that which has determined me to give a definition of the parts of the horizon, to render more clear the utility of that principle. It ſhews me even what an error we generally lie under, when we give it as an indiſpenſable rule always to endeavour to get to windward of the enemy.

The ancients, who manœuvered with oars, had all their weapons at the prow of their ſhips. They attacked their enemy by preſenting a pike which was fixed to that prow, and came to blows after having boarded each other. In order to facilitate ſuch an attack, it was abſolutely neceſſary they ſhould be to windward of their enemy, becauſe the impulſe of the wave accelerated the velocity which the ſtrength of the rowers gave to their ſhips.

That impulſe of the wave was abſolutely contrary to all the efforts of the ſhip under the lee. If ſhe wiſhed to engage, it was abſolutely neceſſary to diſpute the wind with her enemy as much as poſſible, in order to gain over him a real advantage. For want of reflection this rule has been handed down to our days, when the conſtruction of our ſhips, and the nature of our offenſive and defenſive weapons, require us to preſent the flank inſtead of the prow to the enemy: and it is what any one will be ſenſible of, if he compare the advantages of a fleet placed to windward with thoſe of one placed to leeward. They will ſee that the windward poſition is advantageous only to a fleet much weaker than that of the enemy, and which is obliged to retreat to avoid an action: but it is of great importance for a fleet willing to attack an enemy with equal forces, who is ready to accept the engagement, to keep under the lee of that enemy; becauſe the ſhips of the leeward fleet are able to work the guns of their lower tier, which very often are of little, if of any, ſervice at all to the ſhips fighting to windward, eſpecially after a cruize, on account of the conſumption of proviſions and ammunition, the weight of which cannot be replaced, and deſtroys conſiderably the ſtability; and becauſe the fleet which is to leeward gives the adverſe fleet to windward (if it be beaten) no means of avoiding being deſtroyed, nor to ſhelter, from the enemy's fire, ſuch ſhips as may be diſabled, as that to leeward can do. The only real diſadvantage the lee fleet is expoſed to, is the ſmoak which concentrates between the decks: but it is poſſible to remedy this inconvenience by means as eaſy to practiſe as to foreſee.

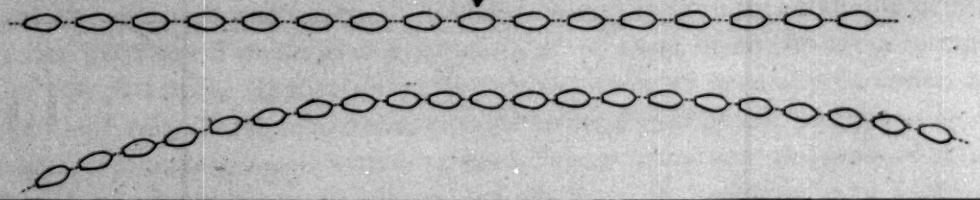
OBSERVATIONS ON THE DIFFERENT ORDERS NECESSARY FOR THE DIFFERENT SITUATIONS OF A FLEET.

I. AN ORDER OF SAILING is requiſite. That order of ſailing which keeps beſt together all the ſhips of a fleet, ſo that they may, in the moſt rapid manner poſſible, be formed in order of battle, ought to be preferred to any other.

There is no occaſion for more than three orders of ſailing. One, when a fleet is to paſs a ſtreight; another, when it ſteers in an open ſea, either looking for the enemy or trying to avoid him; or when proceeding on a voyage; and the third is requiſite when a fleet has an extenſive cruize to perform, ſo as not to be ſurprized or cut off by the enemy. Therefore, whatever I propoſe will be relative to theſe three objects.

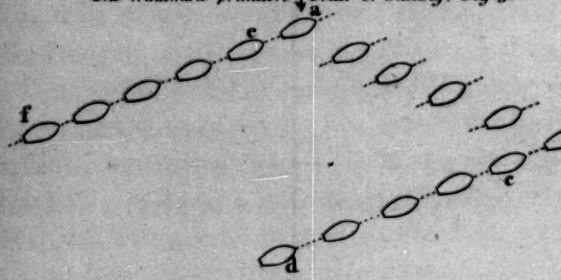
TACTICS.—Plate XVII.

First Order of Sailing.—Grenier's Tactics.—*Fig. 4.*

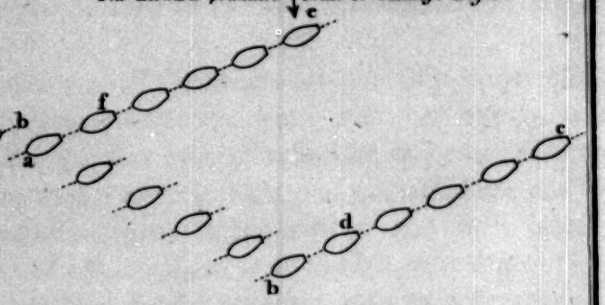


Second Order of Sailing.—Grenier's Tactics.

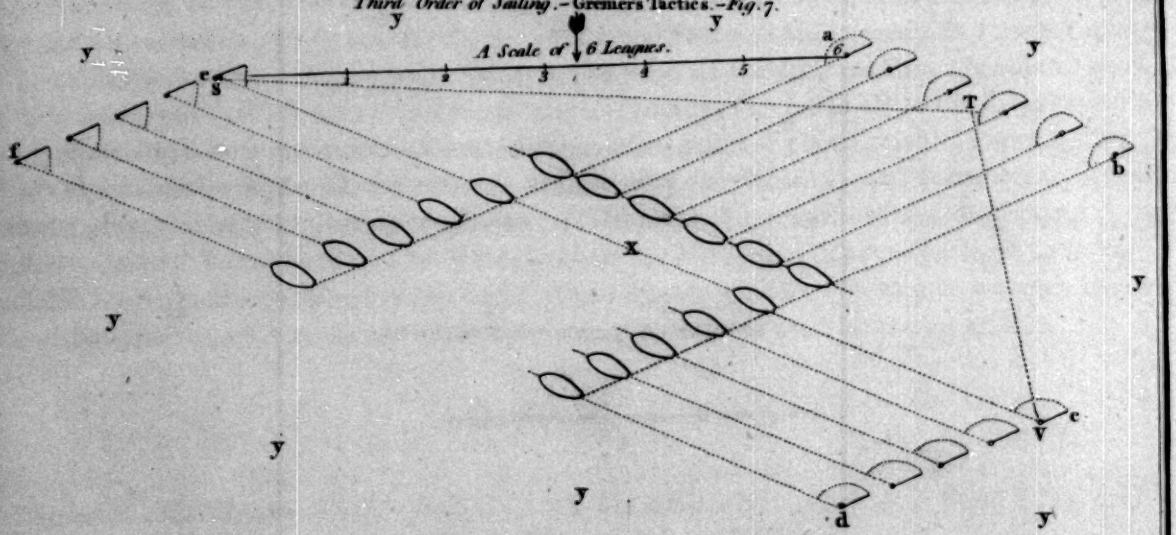
The Windward primitive Order of Sailing.—Fig. 5.



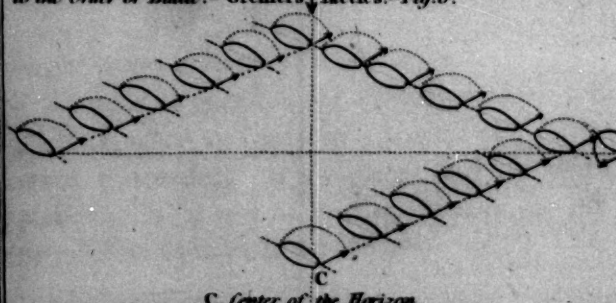
The Leeward primitive Order of Sailing.—Fig. 6.



Third Order of Sailing.—Grenier's Tactics.—*Fig. 7.*

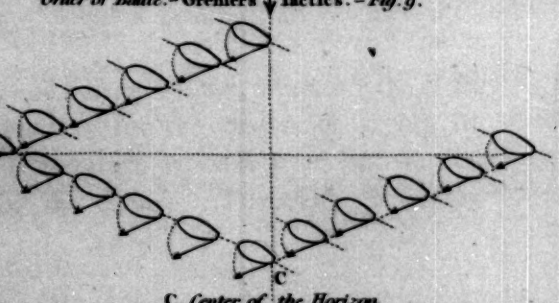


To pass from the Windward primitive Order of Sailing to the Order of Battle.—Greniers Tactics.—*Fig. 8.*



C. *Center of the Horizon.*

To pass from the Leeward primitive Order of Sailing to the Order of Battle.—Grenier's Tactics.—*Fig. 9.*



C. *Center of the Horizon.*

V. Woodthorpe sc. 17 Fetter Lane Fleet Street.

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2dly, AN ORDER OF BATTLE is neceſſary; ſo calculated, that, by a quick movement, the ſhips of a fleet may reciprocally protect each other, and engage the enemy on whatever ſide he appears, either to windward or to leeward.

3dly, There muſt be AN ORDER OF CHASING; ſo diſpoſed, that all the ſhips may act at one time againſt all the forces of a retreating enemy; and be capable of quickly reſuming the ORDER OF BATTLE, if the enemy, after having retreated a little, ſhould ſhew a deſign of coming to action.

4thly, AN ORDER OF RETREAT is neceſſary; by which all the ſhips of the fleet may be able reciprocally to aſſiſt each other, and prevent their being ſeparated by the forces of the purſuing enemy.

That order of retreat is the beſt which may moſt readily be changed into that of battle.

5thly, AN ORDER OF CONVOY is eſſential for the ſafety and protection of merchant ſhips from one port to another. That which is calculated to extend protection and ſhelter to theſe ſhips on every ſide, againſt the approach of an enemy, without interruping their courſe, muſt be the moſt deſirable.

6thly, There muſt likewiſe be an ORDER OF CIRCUMVALLATION; the object of which is to ſeparate from the hoſtile fleet a part of its forces, in order to engage the remainder with more advantage.

That which, being correctly and opportunely formed, can produce an equality between two fleets unequal by the number of their ſhips, can hold victory in ſuſpenſe, and even determine it in favour of the inferior fleet, claims undoubtedly the preference.

Upon theſe principles, I ſhall now explain the general orders I wiſh to propoſe.

THE FIRST ORDER OF SAILING.

THIS order of ſailing conſiſts in the ſhips being arranged in ſuch a manner, that, whatever courſe they ſteer, they ſhould always be in the wakes of one another. This order is that which is, and muſt be, obſerved in any narrow road, whatever may be the occaſion of its narrowneſs, either rocks or ſands. [Tactics, pl. XVII. fig. 4.]

THE SECOND ORDER OF SAILING.

IN this order of ſailing, hitherto abſolutely unknown, the columns *a b*, *c d*, *e f*, of the fleet are to be formed on three ſides of a regular lozenge, and ranged on the two cloſe-hauled lines; the ſhips of the two diviſions *c d*, *e f*, (*ſometimes to windward [Tactics, pl. XVII. fig. 6.] and ſometimes to leeward [Tactics, pl. XVII. fig. 5.] of the third diviſion *a b*,) are to be formed on two parallels of one of the cloſe-hauled lines in the wakes of their reſpective headmoſt ſhips; and this third diviſion *a b* is to be ranged a-head of the two others on the other cloſe-hauled line, and nevertheleſs ſteer checquer-wiſe the ſame courſe as the two diviſions, *c d* and *e f*.

When the diviſion *a b* ſhall be to windward of the two others, I will call that order the windward primitive order of ſailing (fig. 5); and if, on the contrary, the two diviſions *c d*, *e f*, are to windward of the diviſion *a b*, I will call it the leeward primitive order of ſailing (fig. 6.)

* In this the Viſcount de Grenier is rather incorrect; for, in fig. 5, the diviſions *a b* and *e f* are *equally* to windward of *c d*; and, in fig. 6, *a b* and *c d* are *equally* to leeward of *e f*.—*Tranſlator.*

This order muſt facilitate the communication of ſignals to all parts of the fleet; and it will be ſo much the more eaſily obſerved, when the ſhips ſhall gain to windward in the cloſe-hauled line of bearing, or ſteer to leeward four points large, oppoſite to one of the two cloſe-hauled lines; for, in either caſe, they will be in a line in the wakes of their headmoſt ſhip.

AN IMPORTANT OBSERVATION.

THE poſition of the three diviſions in the windward primitive order of ſailing is the ſame for the order of battle natural, the order of retreat, and the order of circumvallation.

That of the three diviſions in the leeward primitive order of ſailing is alſo the ſame for the order of battle inverted, the order of chaſing, and the order of convoy.

Therefore, in all poſſible caſes, the admiral commanding a fleet need not perplex himſelf with any other than theſe two poſitions on one or the other tack, whatever movements he may wiſh the fleet to make.

The only difference between theſe different orders conſiſts chiefly in the courſe which the ſhips of each diviſion are to ſteer, and in their poſitions with reſpect to the tack on which the fleet is to be, which tack ſhall always be the ſame with that of the courſe to be ſteered, as in the uſual tactics*.

THE THIRD ORDER OF SAILING.

IN this order of ſailing, the two diviſions *c d*, *e f*, inſtead of bearing on the headmoſt and ſternmoſt ſhips of the third diviſion *a b*, as in the primitive order of ſailing, may be remote from that third diviſion as much as it will be thought proper for a cruize; and they may be very uſefully placed at a very great diſtance from one another, provided that the ſhips of each of theſe diviſions ſhall keep always their reſpective poſitions in the two lines of bearing; becauſe they can then quickly reunite at ſight of the enemy, and reſume the primitive order of ſailing, by making, each on their ſide, the movement which is to bring them nearer. For, if theſe three diviſions *a b*, *c d*, *e f*, ſhould be ſituated at ſix leagues diſtance from each other, they will be able to ſee over a ſpace of fifty leagues circumference, without the enemy being able to ſurpriſe the fleet in diſorder while they manœuvre to reſume the primitive order; becauſe the ſpace, taken from the center of the horizon, wherein each ſhip of the three diviſions ſtands, to the point of the circumference of that horizon where the enemy is diſcovered, being allowed to be ſix leagues, each diviſion

* If ſeamen, expert in the ordinary tactics, will compare the ſpace occupied by the three diviſions of a fleet diſpoſed in the order of ſailing in three columns, and that which is to be occupied by them when they are diſpoſed in the preſent windward or leeward primitive order of ſailing, (ſuppoſing the diſtances between the ſhips in the reſpective poſitions of both ſyſtems to be equal,) they will find, 1ſt, that in both caſes the fleet muſt occupy an equal ſuperficies; 2dly, that the diſtance of the two farthermoſt ſhips of the fleet, according to the new order, does not exceed by two ſevenths that which exiſts between the two farthermoſt ſhips of one of the three diviſions of the uſual order of ſailing; 3dly, that, in the uſual ſyſtem, all the ſhips of the lee column are to leeward of the leewardmoſt ſhip of the fleet ranged according to the new order, and that, for that reaſon, we may conſider the ſhips in this new order of ſailing, as being more connected together than in the order of ſailing in three columns, ſince they are more capable of affording each other mutual aſſiſtance.

(in order to reform) would have only half that way to make, while the enemy muſt have, to come up with it, the ſix leagues from which he was diſcovered, and *plus* half the way which each diviſions has to make in order to join the two others.

If, indeed, we ſuppoſe the three diviſions *a b*, *c d*, *e f*, [Tactics, pl. XVII. fig. 7.] to be in ſuch a poſition that the two diviſions *a b*, *e f*, ſhould be at ſix leagues diſtance from each other; and that the triangle s, T, v, the two points of which s and v are the two extremities of the baſe, on which reſt the two diviſions *c d*, *e f*, and the point T the ſummit of that triangle, where is fixed the center ſhip of the diviſion *a b*: ſhould that diviſion *a b*, ſteer from T towards x, on the courſe oppoſite to the cloſe-hauled line it ſteered before, while the two diviſions *c d*, *e f*, ſteered likewiſe from v and from s towards x, theſe three diviſions would have each only three leagues to make, in order to join the two other diviſions: and therefore, as theſe three diviſions have only each their three leagues to run to avoid the enemy, this enemy, who had been perceived at ſix leagues diſtance, has neceſſarily nine leagues to make, before he can reach the ſame point. As the greateſt celerity with which ſhips are known to ſail does not allow us to believe it poſſible that the enemy can come up with any of thoſe diviſions before they have formed in the windward primitive order of ſailing, we may, I preſume, conſider this third order of ſailing as exceedingly advantageous for a fleet when cruizing; and ſo much the more ſo, as the frigates may be of great utility to give notice, from a ſtill farther diſtance, of the approach of the enemy, and facilitate ſtill more the communication of ſignals, if they are placed a-head and in the intervals between the diviſions at the points *y y y* to windward and to leeward of the fleet*.

ORDER OF BATTLE.

THE new order of battle I propoſe is ſuch, that the three columns of a fleet are formed on the three ſides of a regular lozenge, as in the windward primitive order of ſailing; except, however, that only the ſhips of one of the three diviſions ſtand in the wakes one of another, and that thoſe of the two other diviſions are ranged on two parallel lines and ſteer checquer-wiſe. So that if you want to change a fleet from the windward primitive order of ſailing to this new order of battle on the other tack, the movement will be infinitely quicker than thoſe which, in former known tactics, are commonly preſcribed to paſs from all the orders of ſailing either in one line, or on the obtuſe angle of chaſing or retreating, or in three or ſix diviſions, to the uſual order of battle. For it will be ſufficient for the ſhips of the three diviſions, ranged in the windward primitive order of ſailing, to heave in ſtays all together, and get on the other tack in the oppoſite line of bearing, and they will inſtantly find themſelves in this new propoſed order of battle; [Tactics, pl. XVII. fig. 8.] and, ſhould the fleet be in the leeward primitive order of ſailing, it would be ſufficient for the ſhips of the three diviſions all together to haul their wind on the ſame tack as they ſteer, and they would find themſelves in order of battle. [Tactics, pl. XVII. fig. 9.]

* We may, if we will, ſuppoſe that in this order of ſailing for a cruize, the three diviſions, to be ranged in the leeward primitive order of ſailing; in which caſe it will be eaſily conceived that the ſquadron, of which the center ſhip is ſupported to windward on the ſummit of the triangle s T v, may equally be ſo on the ſame ſummit when ſuppoſed to leeward of the baſe; and that the three ſquadrons will alſo have it equally in their power to join each other by contrary movements, before the enemy can come up with either of them, or even prevent that junction. Therefore, I ſhall not attempt to give any demonſtration.

When the two columns *c d*, *e f*, (fig. 8.) are to leeward of the third diviſion *a b*, ranged in order of battle, I ſhall name that order the order of battle natural; when, on the contrary, theſe two diviſions, *c d*, *e f*, are to windward of the diviſion ranged in order of battle, (fig. 9.) I ſhall name that order the order of battle inverted.

The former of theſe two orders is calculated for a fleet which muſt combat to leeward, and the latter for a fleet combating to windward.

OBSERVATIONS ON THE NATURAL AND INVERTED ORDERS OF BATTLE.

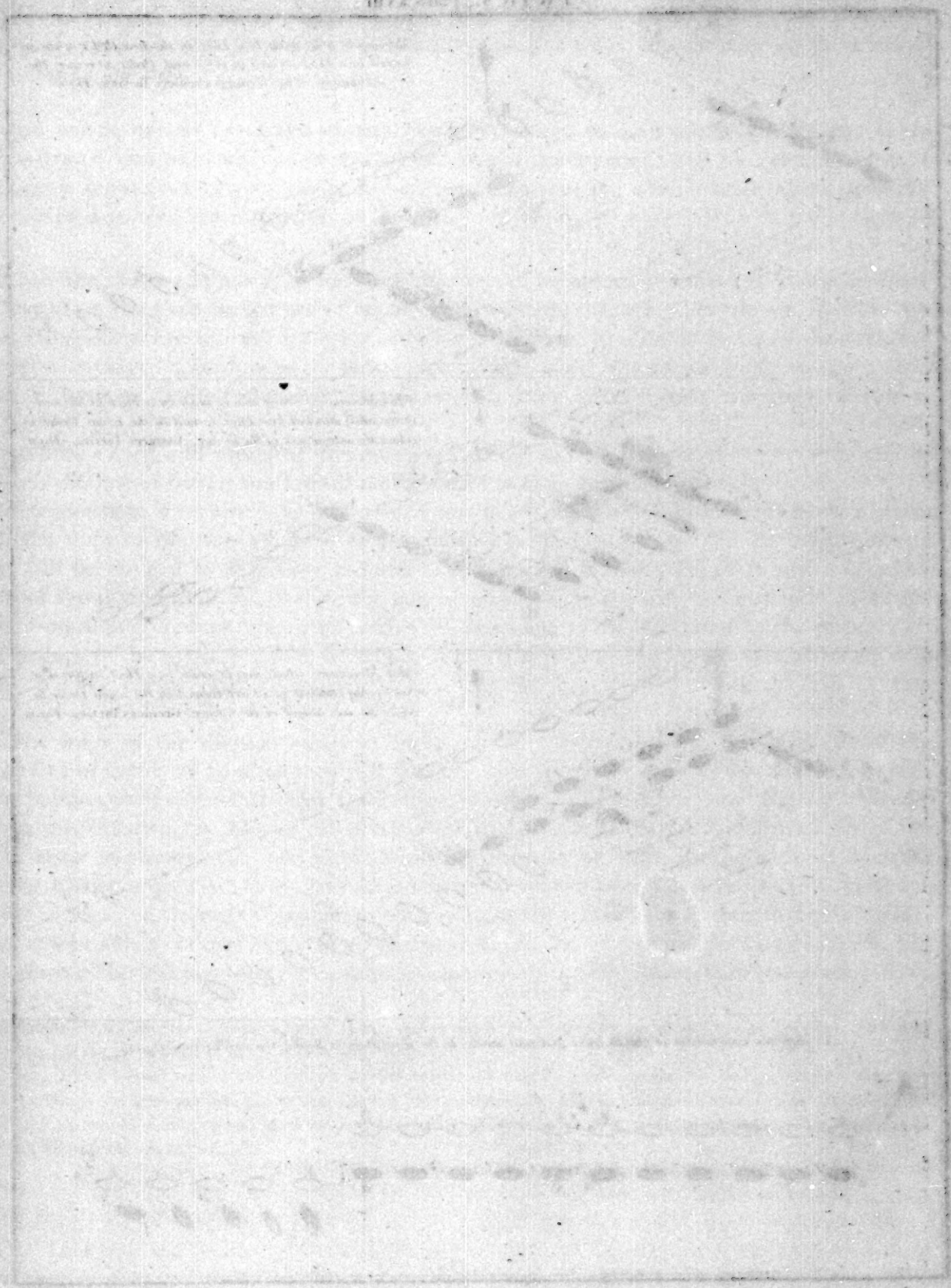
IF we ſuppoſe that the diviſion, which is to combat to windward or to leeward, can take either the ſtarboard or larboard tacks, we ſhall ſee hereafter that it may eaſily be ranged on the four ſides of the lozenge*, and that it can of courſe face the enemy on whatever ſide of the horizon he preſents himſelf. But, in order to know, at firſt ſight of the enemy, whether he is to windward or to leeward of the fleet ranged lozenge-like, on what tack, and on what ſide, the fleet is to be formed, to attack or defend themſelves with advantage, it is proper to know that, in both the windward and leeward primitive orders of ſailing, the direction of the wind always traverſes both the weathermoſt and leewardmoſt ſhips of the fleet; [Tactics, pl. XVII. fig. 8 & 9.] that this leewardmoſt ſhip is always placed in the center of an horizon, which is to be conſidered as the horizon of the whole fleet; and that it is from that ſhip you are to judge, by means of the rules which are known and practiſed in ſuch caſes, whether the lozenge-like fleet be to windward or to leeward of that of the enemy.

If you want to know, at ſight of the enemy, ſeen either to windward or to leeward, on what ſide the line of battle is to be formed in order to be able to ſend one of the diviſions on that ſide of the lozenge where there is none, it is the poſition of the enemy, with reſpect to the direction of the wind, which is to determine it; becauſe, if the enemy is to windward of the fleet ranged in the windward primitive order of ſailing, and, if it bears down on that fleet, with the wind large or right aft, it belongs to its weathermoſt ſhip to obſerve what follows.

If that ſhip, by ſetting the enemy, finds him to ſtarboard of the direction of the wind, the diviſion, which is ſtarboard of that direction of the wind, is to take the ſtarboard tack, and range in order of battle before the enemy is arrived within gun-ſhot: if, on the contrary, the above-mentioned ſhip finds the enemy to larboard, it belongs to the larboard diviſion to aſſume the order of battle, and to take that tack, before the enemy can come to action; which will be very eaſy.

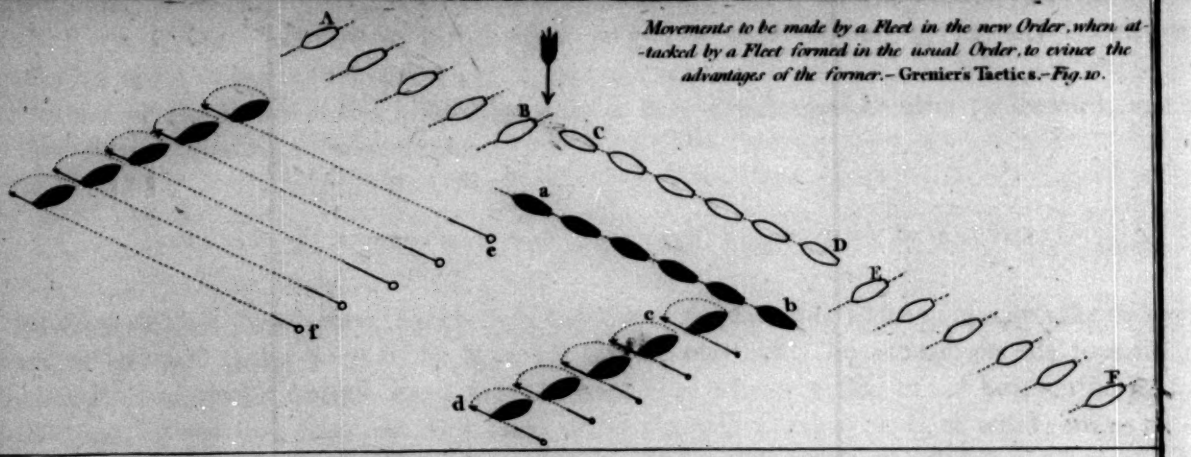
The old rule for chooſing the proper tack is to be obſerved by a fleet in the leeward primitive order of ſailing; obſerving that it is the buſineſs of that fleet's leewardmoſt ſhip to determine it; and the point of the horizon which is oppoſite to that whence the wind blows is the point towards which the obſerver is to be turned to judge on what ſide, whether ſtarboard or larboard, the line of battle is to be formed; becauſe, in that poſition, the ſtarboard ſide muſt always be on his right hand and the larboard on his left.

* In the ſection of evolutions it will be ſhewn, very particularly, with what eaſe and celerity a fleet may paſs from all the poſitions of the primitive order of ſailing to the order of battle on the four ſides of the lozenge.

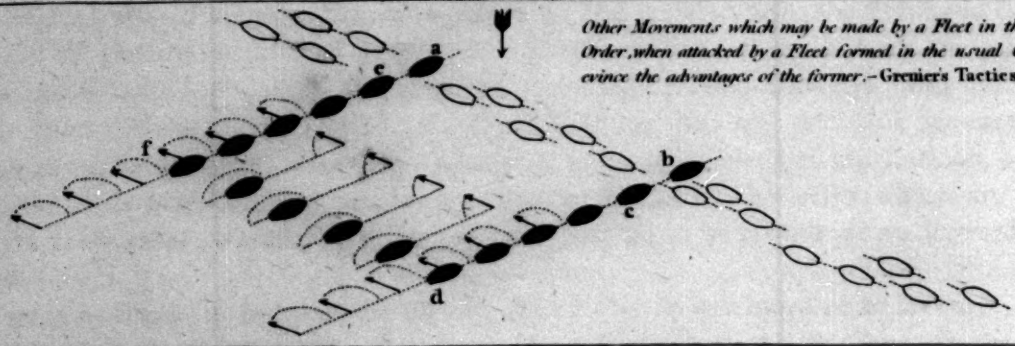


TACTICS.—Plate.XVIII.

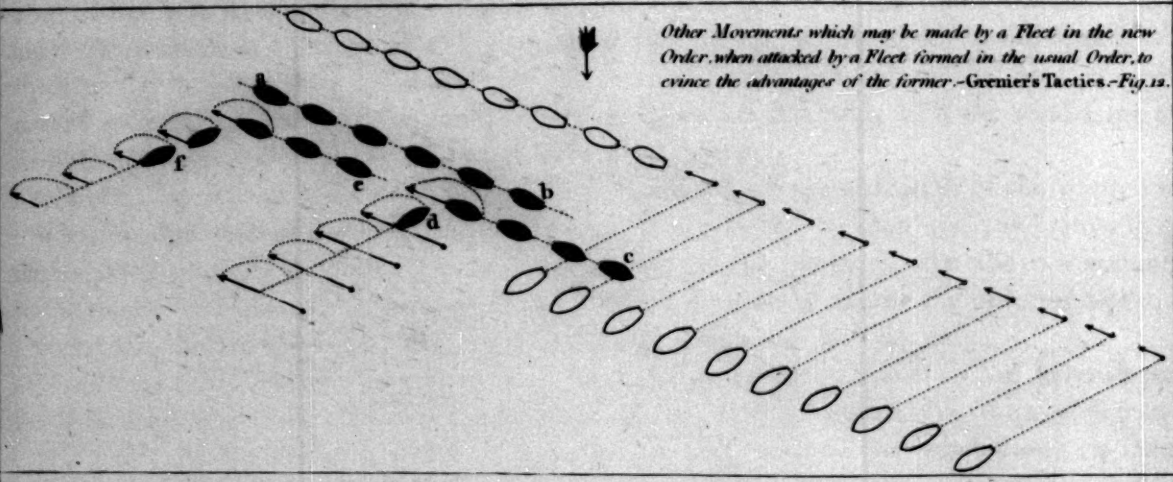
Movements to be made by a Fleet in the new Order, when at-tacked by a Fleet formed in the usual Order, to evince the advantages of the former.—Grenier's Tactics.—*Fig.10.*



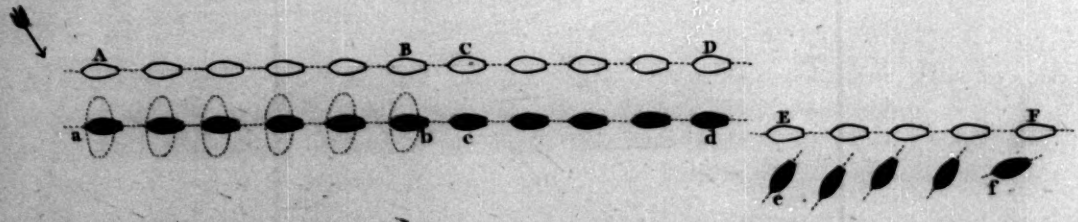
Other Movements which may be made by a Fleet in the new Order, when attacked by a Fleet formed in the usual Order, to evince the advantages of the former.—Grenier's Tactics.—*Fig.11.*



Other Movements which may be made by a Fleet in the new Order, when attacked by a Fleet formed in the usual Order, to evince the advantages of the former.—Grenier's Tactics.—*Fig.12.*



To shew the impossibility of one division assisting another in the usual Order of Battle.—Grenier's Tactics.—*Fig.13.*



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By following this general rule, the line of battle will never be expoſed to be prolonged either to windward or to leeward, nor on the oppoſite tack, by all the ſhips of the adverſe fleet formed in one ſingle line, nor even to be ſurpriſed in diſorder by that fleet while you are forming in orders of battle, natural or inverted.

MOVEMENTS WHICH CAN BE EXECUTED BY THE TWO DIVISIONS RANGED CHECQUER-WISE, AND RESTING THE ONE ON THE HEADMOST, AND THE OTHER ON THE STERNMOST, SHIPS OF THE LINE OF BATTLE RANGED ACCORDING TO THE NEW ORDER OF BATTLE NATURAL; WITH A COMPARISON BETWEEN THAT ORDER AND THE USUAL ORDER OF BATTLE.

SUPPOSE the line A B, C D, E F, to repreſent the fleet of an enemy to windward in the ordinary order of battle, on the cloſe-hauled line of bearing and the ſtarboard tack; [Tactics, pl. XVIII. fig. 10.] then, the leeward line *a b* will repreſent one of the diviſions, in order of battle on the ſtarboard tack, of the fleet ranged according to the new natural order, which the enemy wiſhes to attack, and to which he believes himſelf ſuperior, becauſe that diviſion offers a front infinitely inferior to his own*.

The two lines *c d*, *e f*, will repreſent the two other diviſions ſtanding on checquer-wiſe on the ſame tack as the line of battle, and formed on the oppoſite cloſe-hauled line.

On this ſuppoſition, if the diviſions A B, E F, of the hoſtile fleet, which have it not in their power to attack the ſhips of the line *a b*, wiſh to fall on the headmoſt ſhip *a* or the ſternmoſt *b* of that line, they will be obliged to bear away in order to attack the two ſhips *a* and *b*: then it is neceſſary that each of the diviſions *c d*, *e f*, of the fleet ranged according to the new order, ſhould make the following evolutions according to their reſpective ſituations and to the manœuvre of the enemy.

1ſt, The ſhips of the diviſion *a b* are to ſlacken as much as poſſible their headway, and form a very cloſe line, till the enemy makes a movement to attack the headmoſt or ſternmoſt ſhip of that diviſion.

2dly, The ſhips of the diviſion *c d* are to make ſail till they come under the third ſhip of the rear of the line of battle *a b* †, when they will take the ſame ſail as the ſhips of that diviſion, to preſerve that poſition until the hoſtile ſhips make their evolution to attack the rear ſhips of that diviſion. In this ſituation the ſhips of the diviſion *c d* will be able to obſerve the manœuvres of the enemy, in order to change tack and form themſelves in order of battle on the oppoſite board as ſoon as the hoſtile ſhips ſhall have, after their bearing away, run over a certain ſpace: becauſe the ſhips of the diviſion *c d*, ſteering afterwards cloſe-hauled in the wake of the ſternmoſt ſhip of the diviſion *a b*, will be able to cover the rear ſhips of that diviſion, and get the weather-gage of the hoſtile diviſions which are bearing away; rake their ſhips; run along-ſide of them; double their rear guard, and put

* It is undoubted that a number of ſhips, whatever it may be, cannot be attacked on the ſame tack but by an equal number of ſhips, when they are ranged in order of battle in one ſingle line.

† The poſition which I direct here for the diviſion *c d* refers only to the time I ſuppoſe neceſſary to change tack and come very cloſe to the rear ſhip of the ſame diviſion *a b*. I might as well have preſcribed it under the ſecond or fourth ſhip of the rear of the ſame diviſion *a b*, the whole depending merely on the time neceſſary for the diviſion *c d* to make its evolution. It is what may be tried when you exerciſe the evolutions.

it between two fires, if thoſe hoſtile ſhips are following in the wake of each other*; divide it, if they bear away checquer-wiſe; or gain to windward and put between two fires the enemy's diviſion c d, while it is engaged with the diviſion *a b*.

3dly, The ſhips of the diviſion *e f* may abandon their poſt and run checquer-wiſe under a preſs of ſail on the ſame courſe and in the ſame order they were formed, as ſoon as they perceive that the enemy falls a-head of the diviſion *a b*; in order that, if the diviſion A B of that enemy makes any manœuvre to bear away and fall on the diviſion *e f*, or on the van of the diviſion *a b*, they might, by going about, ſteer in order of battle cloſe-hauled on the oppoſite line of bearing, and cover the headmoſt ſhip of the diviſion *a b*, double the hoſtile diviſion c d a-head, or divide the other hoſtile diviſion A B, which is running checquer-wiſe on the oppoſite tack.

The two diviſions *c d*, *e f*, might again manœuvre another way, in caſe the ſhips of the enemy were ranged in one ſingle line, not well formed, or ſhould be in diſorder and leave too great a diſtance between them while they are engaged very cloſe with the diviſion *a b*. [Tactics, pl. XVIII. fig. 11.]

1ſt, By putting about the ſhips of the diviſion *e f*, and likewiſe the ſhip *a* headmoſt of the diviſion *a b*.

2dly, By making at the ſame time the ſhips of the diviſion *c d* tack, and likewiſe the ſhip *b* of the diviſion *a b*, to keep by the wind, on the oppoſite cloſe-hauled line.

3dly, By making all the ſhips of the diviſion *a b* (which ſtood between the headmoſt *a* and the ſternmoſt *b*) bear away four points at the ſame time, and making them alſo take the ſame tack as the ſhips of the other two diviſions when they are on the beam of the ſternmoſt ſhips of thoſe two diviſions; becauſe, in that poſition, the ſhips of the two diviſions *c d*, *e f*, might gain to windward, on two parallels in order of battle, in the wake of the two headmoſt *a* and *b*; they might put between two fires a part of the enemy's ſhips, which then would be obliged to take the ſame tack as theſe two diviſions, becauſe the ſhips of the diviſion *a b* (which are on the ſame tack as thoſe two diviſions) might prevent the ſhips of the enemy ſteering the courſe oppoſite to that tack.

To conclude, theſe two diviſions *c d*, *e f* [Tactics, pl. XVIII. fig. 12.] may manœuvre in another manner and join both together the rear ſhips of the diviſion *a b*, in caſe thoſe of the enemy, inſtead of falling on the head of that diviſion, ſhould attack the ſternmoſt *b*. But this is what we ſhall ſee more particularly in the ſection on the movements of war†, which follows immediately that on evolutions.

From this ſuccinct expoſition it may be obſerved, 1ſt, That, in the firſt ſuppoſition, the way of thus diſpoſing the forces of a fleet is ſo much the more ſuitable to the defence of the headmoſt and ſternmoſt ſhips of a line of battle; as the ſhips of the diviſion *c d*, being covered by that line of battle, are able to manœuvre without any one ſhip of that diviſion being expoſed to the fire of the enemy; that the diviſion *e f*, the headmoſt ſhip of which is *e*, always preſents the ſide to the enemy, without any one ſhip of that diviſion being expoſed to receive the fire of the enemy either a-head or a-ſtern, becauſe they are not to range in a line of battle unleſs the enemy runs large or before the wind.

* If the hoſtile ſhips which are not engaged with any of thoſe of the diviſion *a b* bear away in ſucceſſion in the wake of their headmoſt, in order to paſs to leeward of the diviſion *a b* and to put it between two fires, then the ſhips of the diviſion *e f* muſt neceſſarily take the weather-gage of them, ſince the headmoſt of that diviſion *e f* is, by her very ſituation, already to windward of the headmoſt of the adverſe ſhips which are bearing away, and ſhe has the opportunity to come as cloſe as poſſible to the ſternmoſt ſhip *b* of the line of battle *a b*.

† The Viſcount de Grenier did not proceed ſufficiently far in his new ſyſtem to give the public this ſection on the movements of war.—*Tranſlator.*

2dly, That, in the ſecond ſuppoſition, the only ſhips which are liable to be raked a-ſtern, while they change tack, are the headmoſt and ſternmoſt of the diviſion in line of battle which cover the ſhips of the other two diviſions.

3dly, That, in the third ſuppoſition, the ſhips of both diviſions *c d* and *e f*, manœuvring under the lee of the diviſion *a b*, are equally, both during the action and the time of their evolution, ſheltered from the fire of the enemy*.

On the contrary, theſe things can ſcarcely be put in practice in the ordinary order of battle, in which all the ſhips are ranged in one ſingle line cloſe-hauled; in which neither of the diviſions can manœuvre, to go and aſſiſt another diviſion, without tacking or veering under the fire of the enemy; without, conſequently, being liable to be diſabled by the ſhot of that enemy to whom it cannot return any. For, if we ſuppoſe [Tactics, pl. XVIII. fig. 13.] the two fleets A B, C D, E F, and *a b*, *c d*, *e f*, ranged in order of battle cloſe-hauled on the ſtarboard tack, and the leeward diviſion *e f* diſabled by the adverſe ſhips; how will it be poſſible for the van *a b* or the centre *c d* to go to the aſſiſtance of the rear *e f*, without veering or going about? How will they be able to execute one of theſe movements, under the fire of the adverſe fleet ranged as well as they within range of the guns on the cloſe-hauled line of bearing, without being raked either a-head or a-ſtern? How could they, in ſhort, aſſiſt the other diviſions *a b*, *c d*, if they had been diſabled during the action, without expoſing themſelves inſtantly to the very ſame dangers? It is impoſſible. And thence it is, that, in actions between two fleets ranged in two parallel lines cloſe-hauled, they are obliged to pay no regard to their weakened part; that the diſabled ſhips of the leeward line get out from that line, in order to ſhelter themſelves under ſome other ſhip, while they repair the damage they have received, if it be not conſiderable, or they run before the wind, by crowding as much ſail as they can, when the damage is ſuch as to require much time to repair it. And thence it is, too, that thoſe of the windward line drop a-ſtern, to get out of the line of battle, and manœuvre as the leeward ones do in ſimilar circumſtances; and thus it is, in ſhort, that naval battles fought in this manner almoſt† always remain undecided; becauſe, by a change of wind, or the approach of night, as I ſaid before, the leſs ſtubborn commander gets away from him who is more obſtinate, or they both mutually ſeparate, by the windward fleet keeping the luff, and the leeward one bearing away ſome points.

The reſult of the compariſon is, that the new order I propoſe is preferable, in this reſpect, to the ordinary one. But I propoſe to evince it ſtill more particularly ſome other time.

OF THE ORDER OF CHASING.

AS the order of chaſing ſuppoſes naturally that the purſued enemy is to leeward, a fleet ranged in the new leeward primitive order of ſailing muſt be in the moſt advantageous poſition for chaſing, [Tactics, pl. XIX. fig. 14.] by ſteering large or with the wind right aft, as moſt convenient for the

* One may readily conceive the movements which might be executed by theſe two diviſions in the inverted order of battle; in which they ſtand checquer-wiſe to windward, inſtead of to leeward, of the diviſion in line of battle: for theſe two diviſions might execute all their movements full as well and as free from the fire of the enemy as in the precedent ſuppoſition.

† The author has been properly cautious in this expreſſion. Hiſtory records many inſtances of deciſive battles on the ocean.—*Tranſlator.*

purſuit; becauſe, ſhould the enemy chooſe to commence an action after having at firſt fled, and reſume the order of battle, the ſhips of the fleet ranged according to the new order would have only to keep cloſe by the wind to find themſelves ranged in the order of battle inverted, however large might be their courſe, while chaſing; and, ſhould the enemy take the oppoſite tack, they might equally well preſent one of the diviſions in a line of battle, and form themſelves immediately after, according to the preſcribed order to combat with advantage, as we ſhall make it appear evident in the ſection concerning evolutions.

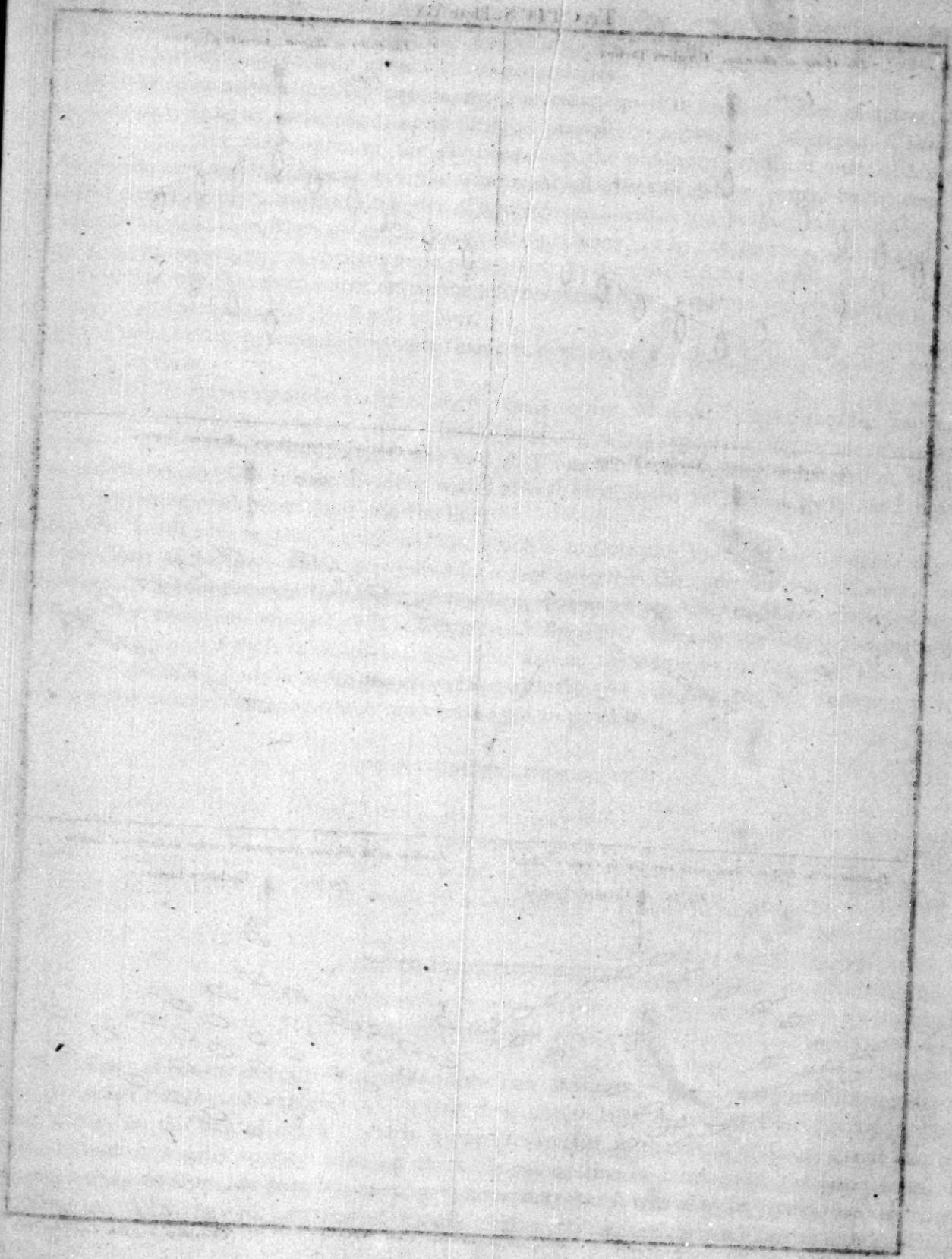
If, notwithſtanding, the enemy you wiſh to chaſe happen to have the weather-gage of you, the windward primitive order of ſailing [Tactics, pl. XVII. fig. 5.] will be the moſt natural to obſerve for chaſing, cloſe-hauled or large, as far as the perpendicular to the direction of the wind on the board he was firſt perceived; becauſe, in that caſe, ſhould the enemy chooſe to engage after having avoided it, the fleet ranged according to the new order might very ſpeedily be formed in order of battle, on either tack, according to the board which the enemy's ſhips would take. This is what will likewiſe be made more evident in the ſection on evolutions.

OBSERVATION.

IN this lozenge-like poſition, it may be obſerved that the fleet, in the order of chaſing, preſents the obtuſe angle of chaſing, as when ranged according to the ordinary tactics; with this difference, that, in order to form themſelves in order of battle, it is enough that, in this lozenge-like poſition, the ſhips of the ſecond diviſion ſhould all keep the wind on the ſame board they were ſtanding on, becauſe they would afterwards find themſelves in a line in the wake one of another; but, according to the uſual tactics, the ſhips have a long ſpace to run before they can execute the ſame evolution.

OF THE ORDER OF RETREAT.

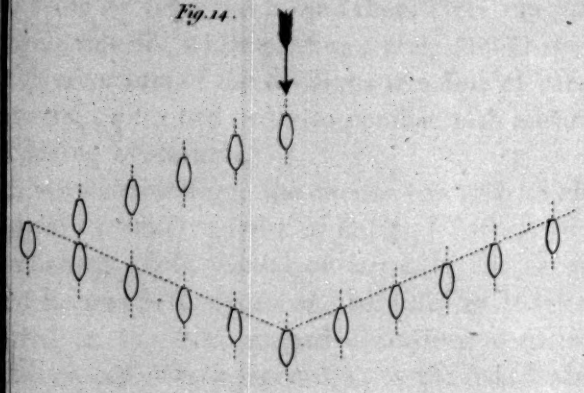
THE defective extent of the ordinary line of battle, the impoſſibility of ſpeedily defending the two extremities of that line, the ſlowneſs and uncertainty with which the ſignals are communicated, are as evident in both the order of retreat as in that of battle commonly practiſed, whether you retreat according to the preſcribed method of the obtuſe angle, or prefer the line a-breaſt on the perpendicular to the wind, or whether, in ſhort, you form it in one ſingle line or in one of the cloſe-hauled lines; becauſe all the ſhips of the fleet, which are ſteering checquer-wiſe, are afterwards to form themſelves in order of battle in one line, and they never can execute that in practice with the preciſion and celerity which is required in theory; as it is almoſt impoſſible for each ſhip to keep her ſtation checquer-wiſe, in any order whatever, with the wind right-aft or large, by obſerving the rule commonly given. For, ſhould the greateſt part of the fleet, being not ſo good ſailers as the reſt, remain a-ſtern at the very moment neceſſary to range themſelves in order of battle, it cannot be executed unleſs the beſt ſailers, who are to leeward, have brought to, to wait for them, and the beſt ſailers to windward have done the ſame ſucceſſively from the very firſt to the laſt, in proportion as they arrive in the wake of the former who are lying-to. But, how very difficult is it not afterwards to form that line of battle, when you are obliged to correct the defects ariſing from the lying-to, owing to the more or leſs lee-way of ſhips in that ſituation! What an advantage has not your enemy over



TACTICS_Plate XIX.

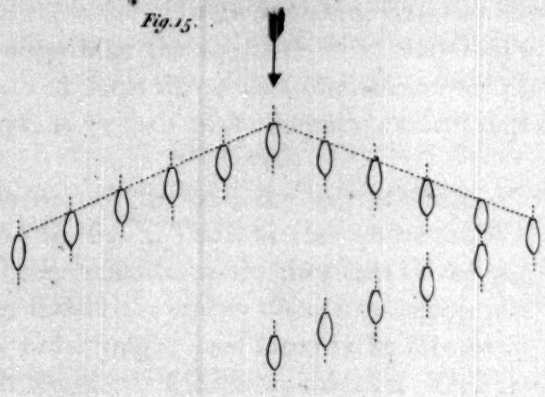
The Order of Chasing.— Grenier's Tactics.

Fig. 14.



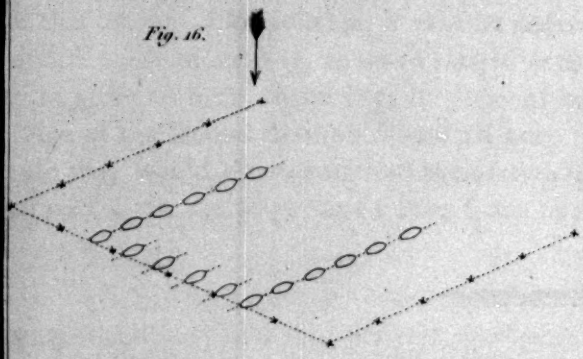
The Order of Retreat.— Grenier's Tactics.

Fig. 15.



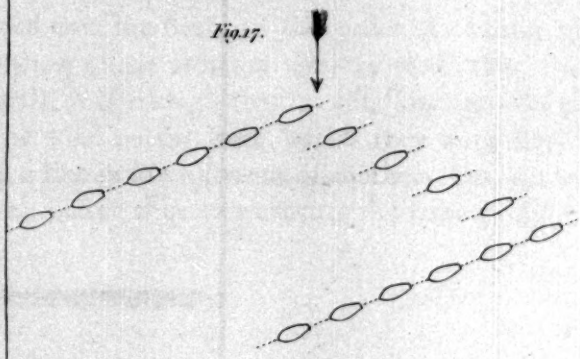
The Order of Convoy.— Grenier's Tactics.

Fig. 16.



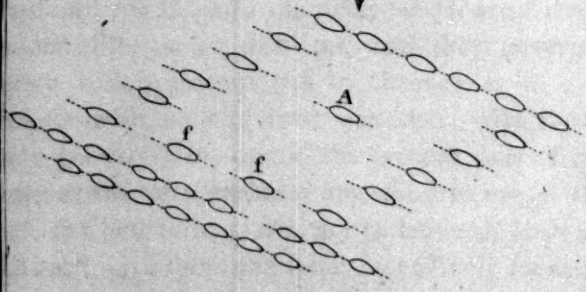
The Order of Circumvallation.— Grenier's Tactics.

Fig. 17.



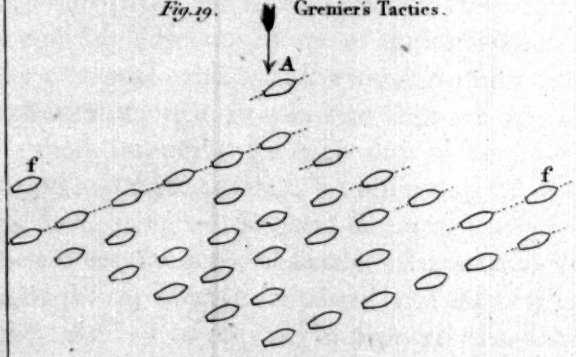
Position of the Frigates, Transports, &c when in Order of Battle.

Fig. 18. Grenier's Tactics



Position of the Frigates, Transports, &c when in Order of Sailing.

Fig. 19. Grenier's Tactics.



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you, if he can attack you in that ſituation, wherein your ſhips are all motionleſs, and leave neceſſarily between them ſpaces, which that enemy may avail himſelf of, to divide your line and envelop a part of it, eſpecially at each of its extremities!

I thought proper, therefore, to pay no more attention to that kind of order of retreat than to the cuſtomary order of battle; and, accordingly, I propoſe, as a new order of retreat, [Tactics, pl. XIX. fig. 15.] the ſame order of the diviſions as in the windward primitive order of ſailing, the ſhips of the fleet ſteering large or with the wind right-aft; becauſe, whatever may be the courſe, they muſt be very ſpeedily formed in the order of battle natural, either by keeping all together by the wind and forming themſelves on the ſame tack as the enemy, or by taking the oppoſite tack, as we ſhall have an opportunity to explain more particularly in the third ſection on evolutions.

Should any one, however, retort on me the obſervations I have made on the impoſſibility of preſerving an order checquer-wiſe, I will anſwer,

1ſt, That it cannot be material for more than one diviſion only; while, in the cuſtomary order, it is ſo for all of them.

2dly, That it cannot again be material, with reſpect to the diſtances it might occaſion between the ſhips of that diviſion, however near might be the purſuing enemy, endeavouring either to divide it or to attack both its extremities; becauſe the two diviſions which are reſting to leeward on the headmoſt and ſternmoſt ſhips of that diviſion, would always be diſpoſed to defend them, and repel the enemy that attempted penetrating into the line.

Finally, I will anſwer, that, as the diviſion which is to form the order of battle takes up only the third part of the ſpace which is required by a fleet ranged in the common order of retreat, much leſs difficulty would occur in forming it on one line, and much leſs time would be employed in performing that evolution, eſpecially if the leewardmoſt ſhip firſt keeps by the wind, making as little ſail as poſſible, and if thoſe to windward take their ſtations according to the degree of their celerity; and place themſelves in the wake one of another without ever bringing to; for, bringing to is the moſt defective of all evolutions which can ever be put in practice.

OBSERVATION.

IN this order of retreat, formed lozenge-like, we may obſerve an obtuſe angle ſimilar to that of the ordinary tactics: and that the ſhips of the ſecond diviſion, in order to form in order of battle, have only to keep by the wind on the ſame board as they are ſtanding: but which cannot be performed in the uſual order of retreat, unleſs by a very long and tedious movement.

OF THE ORDER OF CONVOY.

THE order of convoy ought to be formed in the ſame manner as the leeward primitive order of ſailing, except that the two diviſions which ſteer four points large in order of ſailing, are to ſteer cloſe-hauled on the line of bearing which is oppoſite to that in the order of ſailing; and that the third diviſion is equally to form itſelf on the cloſe-hauled line of bearing on the ſame courſe as the two other diviſions, ſo that the merchant ſhips may be ſurrounded by theſe three diviſions [Tactics, pl. XIX. fig. 16.] and ſteer afterwards checquer-wiſe with the wind large or right-aft. In

this position, (agreeable to the desire of the commander of the convoy, even if it be very considerable, and take up a great superficies,) the escorting fleet will be able, without disturbing the order it is in, to surround it, by means of merely increasing the distance between each ship: but, in case the convoy were to be met by an enemy sufficiently strong to come to action, and who had a mind to do it, then it might perform the evolution we shall prescribe in the section concerning evolutions.

Moreover, this order may again be useful should you wish to encompass, or to put between two fires, a part of the enemy's force which might be separated from the body of the fleet. This will also be shewn in the sequel.

OF THE ORDER OF CIRCUMVALLATION.

IN the order of circumvallation [Tactics, pl. XIX. fig. 17.] the ships of the three divisions are to be ranged in the same order as the windward primitive order of sailing, and steer the course opposite to that of the close-hauled line of bearing on which they are formed; because, in running on part of the enemy's ships, they may put them between two fires and separate them from their fleet, if they pass from that order of circumvallation to the order of convoy, as will be seen in the section on evolutions.

OF EVOLUTIONS.

OBSERVATIONS.

BEFORE explaining the different movements which the divisions are to perform in the new order of a regular lozenge, I cannot forbear laying down some general rules of the utmost importance.

I. The order of sailing on one line is that which is to be observed by the ships of a fleet in going out of any harbour, or anchorage whatever.

II. To form that line speedily and without confusion, the station of the ships should not be regulated by the order of the list, or rank of seniority of their commanders, the admirals excepted, who are to keep aside and to windward of the line.

III. Ships which are nearest to the mouth of the harbour, or which are most offward, are to get under way first; and those which come successively in that same position, with respect to the remaining part of the fleet which is still at anchor, are to do the same one after another.

IV. When the road is very wide, and many ships may get under way at a time, without risk of damage or confusion, they are at liberty to do it, provided that the ships most offward of the road, or of the direction of the wind, get first under way.

V. After the ſhips of that fleet are come out of a port or road, ſteering with the wind large or right-aft, they are next to form themſelves in a cloſe-hauled line of bearing before they aſſume the primitive order of ſailing lozenge-like. And, that they may with preciſion execute that movement, it is neceſſary that the ſhip who firſt got under way ſhould take the head of the line, and obſerve not to keep cloſe by the wind before ſhe is ſure that the other ſhips are to windward of the courſe ſhe is to ſteer.

VI. The ſhips which, in getting under way, have followed ſucceſſively the headmoſt ſhip, are to regulate their ſteerage each by their ſhip a-head, if they be either to windward or in the wake of that ſhip; and they are to keep always as cloſe to the wind as poſſible, if they be to leeward of her.

VII. Were the ſhips in the open ſea ſeparated by a calm or ſome other cauſe, and it were found neceſſary to reſume the order of ſailing on a cloſe-hauled line of bearing, to be able afterwards to paſs to the various orders of ſailing lozenge-like; then the headmoſt ſhip of all, happening to be on the ſide of the tack on which the order is to be formed, is to be the van ſhip of that line.

But, before hauling by the wind, that ſhip is to ſet, as I ſaid before, all the other veſſels to windward of the courſe ſhe is going to ſteer. To this effect, at the moment the ſignal for rallying is made, all the ſhips are to haul the wind, if the other is to windward of them; or, if ſhe be to leeward, it will be her buſineſs to haul the wind, and all the others will bear away and come in ſucceſſion to form themſelves in her wake, manœuvring, always ſo as to follow cloſely the ſhip a-head of them, either to windward or to leeward.

VIII. The fleet being ranged cloſe-hauled in one line, the admirals (who, as we ſaid before, art. II. are to keep themſelves to windward of that line) will come and take their ſtations, each in his own ſquadron. To this end, the ſhips which are to compoſe each of thoſe diviſions will manœuvre ſo as to leave proper room for their admiral; which will be ſo much the more eaſy to execute, as thoſe admirals who are to windward of that line, and who muſt know not only the number of ſhips that has been allotted to each diviſion, but alſo which they are, will be able to repair to the ſtation which ſhall have been aſſigned them by the commander in chief either at the head or in the center of their ſquadron, according to the ſignal made for that purpoſe. But, it is neceſſary that this evolution ſhould be made with a preſs of ſail from the van to the rear, and in ſucceſſion, that the order of that line be not diſturbed, and no ſhip be obliged to bring to.

IX. To range a fleet on a regular lozenge, the diviſion which is to windward or to leeward of the two parallel diviſions muſt be compoſed of one ſhip more than either of the two other diviſions*: therefore, in all caſes, this diviſion will have one ſhip more than the two others; and, ſhould you wiſh to know what number of ſhips are requiſite to compoſe a fleet intended to be ranged in the lozenge-like order, the table of the regular lozenge is in this progreſſion: 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, &c. increaſing always by three, from 7 to 100, and *ad infinitum*: ſo that, with one of thoſe given numbers, ſhould you wiſh to know of how many veſſels the diviſions of a fleet are to

* In the cuſtomary order of battle the three diviſions which compoſe a fleet are each formed of a number of ſhips equal to the third part of the whole. The admiral is placed in the middle of the center ſquadron. If he keeps that ſtation, during action, it is impoſſible for him to ſee what paſſes at the van or at the rear of his fleet; if he quits that ſtation to inſpect and judge the effects of the action, he leaves a vacancy: and the center ſquadron, weaker by one ſhip than either the van or the rear of the line of battle, muſt ſurely be conſidered as a defect in the formation of the three diviſions? And would it not be more advantageous to have it rather ſtronger by one ſhip than the two other diviſions? This advantage ariſes, in every caſe, from the ranging a fleet in the form of a regular lozenge; an order in which the admiral, placed in the center of that lozenge, can, as I have already demonſtrated, judge with preciſion of the behaviour of his fleet, and of the conſequences of the action from the beginning to the end.

be compoſed, firſt take one out of that number, and the third part of that remainder will be the number ſought for, to which you will add the firſt ſubtracted unit to compoſe the ſecond diviſion.

EXAMPLE.

IF you want to know how many ſhips are to compoſe each diviſion of a fleet of forty-nine ſhips, you muſt firſt take one out of forty-nine, leaving forty eight, the third of which, being ſixteen, is the number of which the firſt and third diviſions are to be compoſed: then, to the ſixteen of the ſecond diviſion add the ſubtracted one of the forty-nine, you will have ſeventeen for that diviſion. And thus it is for any other number; which muſt be determined on before quitting the anchoring-place. And, in order that each ſhip ſhould know which diviſion ſhe belongs to when the whole fleet is ranged in one ſingle line, the van ſhip of that line ſhall hoiſt at the top of the mizen maſt the flag marked N° 1, the next will hoiſt at the ſame place N° 2, and thus ſucceſſively all the ſhips which follow the van ſhip, as far as N° 16, will do the ſame, if the fleet is compoſed of forty-nine ſhips, or as far as the third of any number.

The ſternmoſt or rear ſhip ſhall hoiſt at the top of the fore-topgallant maſt the ſame flag N° 1, that which precedes her will hoiſt at the ſame place N° 2, and thus ſucceſſively all the other ſhips as far as N° 16, or the third part of the quantity of ſhips with which the whole fleet is compoſed.

In this way the ſhips of the center diviſion, not hoiſting any number, will be known to be thoſe which are to compoſe the other diviſion.

X. When the fleet is ranged on the three ſides of the lozenge, with the ſecond diviſion to windward, the headmoſt and ſternmoſt ſhips of that diviſion become the van ſhips of the two other diviſions in all the evolutions the fleet may practiſe to gain to windward; and they will, on the contrary, become rear ſhips whenever the fleet ſhall ſteer large or with the wind right-aft.—If this ſecond diviſion is to leeward of the two others, the ſternmoſt ſhips of the firſt and third diviſions will become the van ſhips of theſe two ſame diviſions whenever the fleet ſteers large or before the wind; but if this ſecond diviſion is cloſe-hauled, then the ſternmoſt of the firſt diviſion will become headmoſt of the ſecond, and the ſternmoſt of the third will be the rear of the ſecond. When the fleet is formed in the lozenge order of battle, only theſe three are the principal things (whatever may be the diſtance allotted between the ſhips) neceſſary to maintain it; viz.

The firſt, that the ſternmoſt of the third diviſion, and the headmoſt of the ſecond, ſhould bear from one another in the direction of the wind.

The ſecond, that the ſternmoſt of the firſt diviſion, and the ſternmoſt of the ſecond, be both on the perpendicular of the wind.

And the third, that the headmoſt of the firſt diviſion ſhould bring the headmoſt of the ſecond diviſion on the cloſe-hauled line of bearing oppoſite to her tacks: that the headmoſt of the third diviſion ſhould bring in the ſame manner the ſternmoſt of the ſecond; and that all the ſhips of each diviſion, from their headmoſt to their ſternmoſt, ſhould bring each other ſucceſſively on the cloſe-hauled line of bearing oppoſite to that of their courſe; ſo that, were all the ſhips of each diviſion to ſteer cloſe-hauled on the other board, they would find themſelves in the wake of their reſpective ſeconds a-head, and which are to windward of them. This will be ſo much the more eaſy to practiſe, as the headmoſt and ſternmoſt of the ſecond diviſion, which ſerve as a point of ſupport to the ſhips of the firſt and third diviſions, are in a line, and therefore in a fixed and determined poſition.

XI. Whenever the fleet ſhall be ranged in one ſingle line, the firſt diviſion ſhall be the foremoſt; the ſecond will be that of the center; and the third will be that which holds to the rear ſhip. They might otherwiſe be deſigned, by van guard, the center, and the rear guard.

XII. When you want to change the order from one line to the regular lozenge, you muſt always put one ſhip more in that diviſion which is to be at the head of the two others, and to form of courſe the ſecond diviſion. To execute this without confuſion you will make uſe of the numbered flags, as preſcribed before in the ninth article, only obſerving the following method of doing it.

If it be the van guard of the fleet ranged in one line which is deſigned to be the ſecond diviſion, the ſhips which compoſe it hoiſt no flags; but the ſternmoſt of the line will hoiſt N° 1, and then, from that ſternmoſt to the tenth ſhip (if the fleet be compoſed of thirty-one,) every ſhip will hoiſt her own proper number. Then, the ſhip which precedes N° 10 will hoiſt alſo N° 1, and thus ſucceſſively up to the tenth ſhip every one will hoiſt likewiſe her proper number; ſo that the eleven remaining ſhips of the fleet are thoſe which form the ſecond diviſion.

The ſame method is to be obſerved, when the rear is the diviſion deſtined to be the ſecond in the order of the regular lozenge; with this only difference, that it is the headmoſt ſhip of the line which is to hoiſt the flag N° 1, and that thoſe which are next after her are to conform themſelves ſucceſſively one after another to what I ſaid juſt now with reſpect to the hoiſting of their reſpective numbers.

As for what concerns the center diviſion, what we have already ſaid, art. IX, may be conſidered as ſufficient.

XIII. When the fleet ſhall be ranged in the order of the regular lozenge, the weathermoſt of the two parallel diviſions is to be called the firſt diviſion, and the other the third. That which is at the head of theſe two diviſions (in whatever of the general orders of the lozenge it may be) is to be termed the ſecond. By theſe means there never will be any danger of miſtaking the commands for the execution of any evolution.

XIV. Whenever any of the diviſions of the lozenge-like fleet is to paſs to a different poſition, to aſſume another order, the headmoſt ſhip will remain in the ſame poſt where ſhe is, and the next ſhip to her is to become headmoſt to that diviſion, during the time of the evolution.

XV. The diviſions named firſt, ſecond, and third, preſerve their reſpective denominations while they perform their evolution to paſs from one order to another, till that evolution is compleated, and the new order aſſumed.

XVI. If the three diviſions ceaſe to move in the lozenge-like order, either to make head-way, or go a-ſtern, to get to windward or to leeward, the number of ſhips they are compoſed of is never to be altered, unleſs the admiral thinks proper to add ſome ſhips to one of them, which he will give notice of by a particular ſignal.

XVII. When, from the poſition in which the enemy is perceived to be, the particular order of battle is reſolved on, the diviſions ſhould always begin to form themſelves in the reſpective poſitions of that order, and then they may ſteer the courſe moſt proper to near the enemy. Thus, the ſhips of the three diviſions will have but one movement to make to be in a ſituation of either attacking or defending.

XVIII. When, in the explanation of an evolution, the expreſſion *preſſing ſail* is made uſe of, it is to be underſtood that ſuch are to be ſet which will give a ſhip the ſwiftneſs neceſſary to make her execute with preciſion the evolution required. It is, therefore, not ſufficient to add only a few ſails, but all of them are to be ſet which the ſhip can carry, and none are to be ſuppreſſed till ſhe is arrived at her ſtation.

This article concerns eſpecially the worſt ſailers of the fleet, which are not to neglect ſetting all the ſails they can poſſibly carry, that they may not cauſe delay, but preſerve their poſt.

XIX. When the fleet, being in one of the orders of ſailing, tacks together, it is to be wiſhed, for the preciſion of the evolution, that all the ſhips could perform it at the ſame inſtant: but as, in

this common movement, the ſhips might run foul of each other, it muſt be a rule that none ſhall heave in ſtays before her next a-ſtern has let go the ſheets of her fore-ſtayſail.

XX. Whenever, while the fleet is running checquer-wiſe on one of the cloſe-hauled lines of bearing, the admiral wiſhes to change the tack, all the ſhips of the line are to tack (as we have juſt now ſaid) when the movement of her which is immediately to windward be determined.

XXI. In veering in ſucceſſion, the chief object is, that each ſhip ſhould find herſelf at her ſtation after the execution of the movement. Hence it reſults that they are, as much as poſſible, to run in the ſame wakes as the headmoſt of the line, which will be eaſily done, by increaſing or diminiſhing ſail.

XXII. In an evolution when all the ſhips of the line are to bear away at the ſame time, the van ſhips are to take care not to bear away before thoſe of the rear have done it, in order to avoid their mutual running foul of each other.

XXIII. When the fleet tacks in ſucceſſion, the ſhips are to be very attentive in tacking exactly in the wake of their headmoſt ſhip, without lengthening the line: whence it follows that no ſhip is to wait till that which is a-head of her has compleated her evolution before ſhe herſelf begins alſo to tack; and that when a ſhip wiſhes to find herſelf at her poſt after having tacked, ſhe is to regulate herſelf by ſome of the ſhips already cloſe-hauled on the other tack, if there be any ſo ranged already, or judge at one glance the place they will take up after they ſhall have ended their evolution.

XXIV. When the order has been ſo diſturbed as not to be ſuſceptible of being reſtored by a ſimple movement, the three diviſions muſt form themſelves firſt in one ſingle line, that they may more eaſily afterwards reſume the lozenge-like order: and, in that caſe, the leewardmoſt ſhip of the fleet is that by which the other ſhips are to regulate themſelves to form that line, as has been mentioned in the articles II, V, VI, and VII.

OBSERVATIONS ON THE DIVISION OF A FLEET INTO DIVISIONS OR SQUADRONS.

THE method of forming a fleet in a lozenge-like order, which I now propoſe, changes in nothing the diviſion of a fleet according to the eſtabliſhed cuſtom. It is true that the ſecond diviſion of this lozenge-like fleet is compoſed of one ſhip more than either of the two others. But that does not prevent the ſub-dividing of that diviſion in the ſame proportions as thoſe of the other two, viz. in thirds, becauſe the exceeding veſſel of that ſquadron may ſeveral ways be conſidered as being there neceſſary. In the firſt place, ſhe may be conſidered as belonging to the center diviſion of that ſquadron, and intended to make it ſtronger in that part. In the ſecond place, ſhe may be conſidered as a ſingle ſhip of the fleet, placed in that poſt to ſerve as a guide to the whole fleet, and as a van to the firſt and ſecond diviſions alternately, ſince the poſition of all the ſhips of that fleet is referable to her own, and ſhe ſteers alternately at the head of the firſt and the ſecond diviſions.

Therefore, if we ſuppoſe a fleet of ſixty-four line of battle ſhips, beſides the frigates, fire-ſhips, and ſtore-ſhips, each diviſion will be compoſed of twenty-one ſhips; and each ſubdiviſion will be of ſeven. The headmoſt ſhip of the ſecond diviſion may, if you like, be conſidered as a ſingle ſhip placed there to fulfil the functions I have juſt mentioned; or the center ſhip of that diviſion will be conſidered as a ſhip adding momentary ſtrength to that ſecond or center diviſion*.

* When the three ſquadrons of a fleet are all equal in point of number of veſſels, there is likewiſe in each ſquadron a diviſion ſtronger by one or two ſhips than the two other diviſions, whenever it happens that thoſe ſquadrons cannot be divided exactly into three equal parts, as it is the caſe when a fleet is compoſed of twenty-eight or twenty-nine ſhips, &c.

OBSERVATIONS ON THE MOST ADVANTAGEOUS POSITIONS IN WHICH ARE TO BE RANGED THE SHIPS, FRIGATES, AND TRANSPORT-VESSELS BELONGING TO A LOZENGE-LIKE FLEET, WHETHER RANGED IN ORDER OF SAILING, ORDER OF BATTLE, &c.

IN the order of ſailing, the admiral is to be a-head of the fleet, at a ſhort diſtance from the headmoſt of the ſecond diviſion, and in the direction of the wind with the headmoſt of the firſt diviſion. [Tactics, pl. XIX. fig. 19.]

Two of the frigates are to obſerve the ſame rule and the ſame poſition, with reſpect to the van ſhip of the third diviſion and the ſternmoſt of the firſt.

In the order of battle, on the contrary, the admiral is to be in the center of the lozenge, and two of the frigates on the fourth ſide of the lozenge. [Tactics, pl. XIX. fig. 18.]

As for the tranſports and ſtore-ſhips, when there are any, their ſtation is to be in one line on the ſide oppoſite to that of the enemy, when ranged in order of battle; and, if in order of ſailing or convoy, they may occupy the ſpace circumſcribed by the lozenge.

In any other circumſtance theſe ſhips are to occupy the different ſtations appointed for them, that they may diſtinguiſh the ſignals and execute the commands of the admiral.

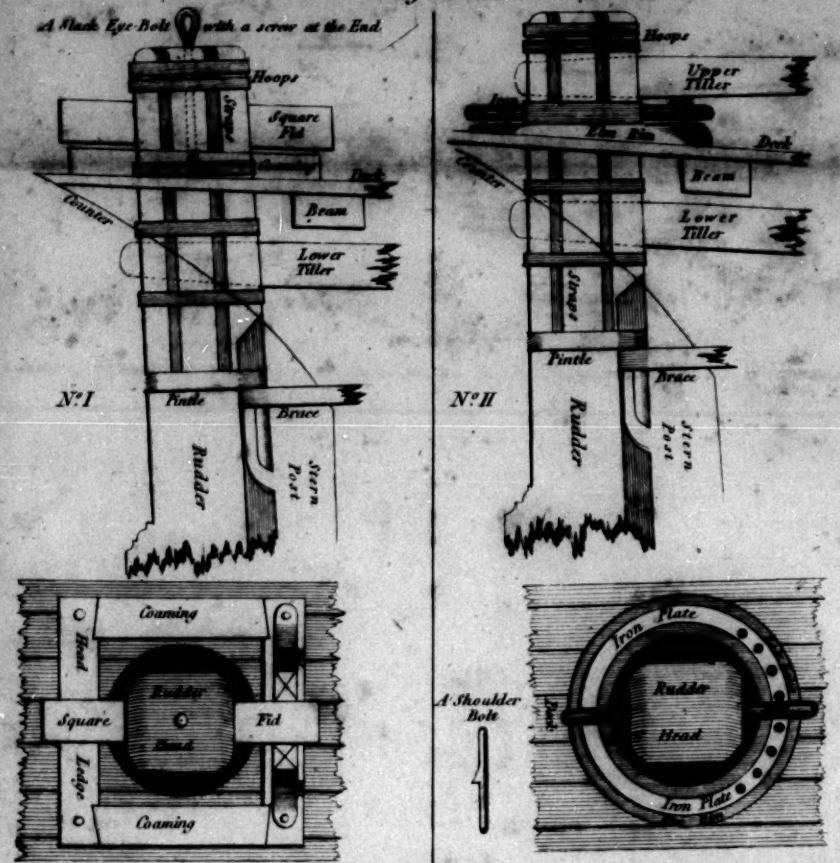
Laſtly, when the fleet ſhall paſs from the order of battle to any other order whatever, or from any order to the order of battle, the admiral's ſhip is to bring-to, and not to take any of the poſitions above mentioned till after the complete execution of the movement.

HERE the Viſcount de Grenier finiſhed his new ſyſtem. It is probable that they will not ſupercede the preſent practice; but, as he has diſplayed much ingenuity in its contrivance, and ability in its ſupport, as in his work many criticiſms are offered upon the ſyſtem which now prevails, the inſertion of his labours was, we truſt neceſſary to complete the ſubject, and may perhaps ſuggeſt hints for the improvement of naval tactics.

MISCELLANEOUS.

The Inventions of Captain Edward Pakenham.

Inventions for Saving a Rudder when beaten off.



N°I consists of a square fid made to fit the upper hole of the rudder and bolted through the rudder head. It has likewise a Coaming fitted round the rudder hole and well secured to the Deck, for the fid to work on, acting as an upper gudgeon, in case the pintles are beaten off. Palls are bolted through the fore part of the Coaming, to quiet the Rudder, in the room of Chocks, in case the tiller should be carried away.

N°II consists of a circular rim of Oak or Elm, bolted and denched round the rudder hole, from 9 to 12 Inches broad and 9 Inches thick at the fore part, decreasing its depth aft, so that its surface may be square with the rudder-head. In the middle of the rim, on the upper surface there is let in, one half of its thickness, & screwed, an Iron Plate, about 4 Inches broad & half an Inch thick. On the fore part of the Plate, on each side of the middle line, are punched holes, that are bored through the Deck, to receive Iron shouldered bolts; by placing one of which on each side of the Iron bolt which goes through the rudder head, the rudder is quieted when the tiller is broken. An Iron bolt at the height of the circular rim is driven through the rudder head, & an Iron hoop on the head of the rudder.

The Deck represented in both these drawings is the middle deck in three decked Ships, and the upper Deck in two decked Ships.

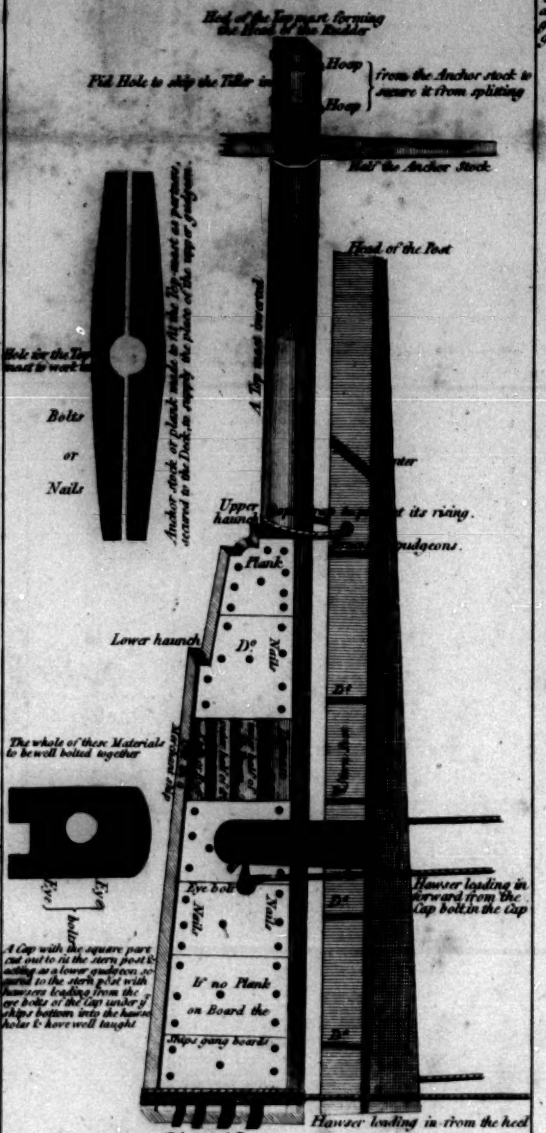
The Sole of Rudders is recommended to be 9 or 12 Inches in depth; by which in case of partially grounding, the Rudder may be saved with the loss of the Sole only.

This second plan is equally applicable to Ships that steer with a tiller on deck, by having the Coaming fixed upon the Deck immediately underneath the tiller; & it is presumed to possess these other advantages: the upper tiller hole is preserved vacant for use, in case the lower tiller be broken; the round bolt through the Rudder will work upon the circular plate, as an upper gudgeon, with less friction; and the shouldered bolts will stop the rudder when in any direction.

METHOD of Steering with the Wheel from the upper tiller, in cases when the lower tiller is broken. Viz. Three-decked Ships are fitted with a block in mid ships, under the upper deck (the same as is fixed under the middle deck) that the upper tiller may be connected to the Wheel by ropes leading from the Wheel, through the Block under the upper deck, thence through a Block fixed in the side, and thence to the upper Tiller.

All three decked Ships are, by order of the Admiralty, to be fitted with a Block for this purpose.

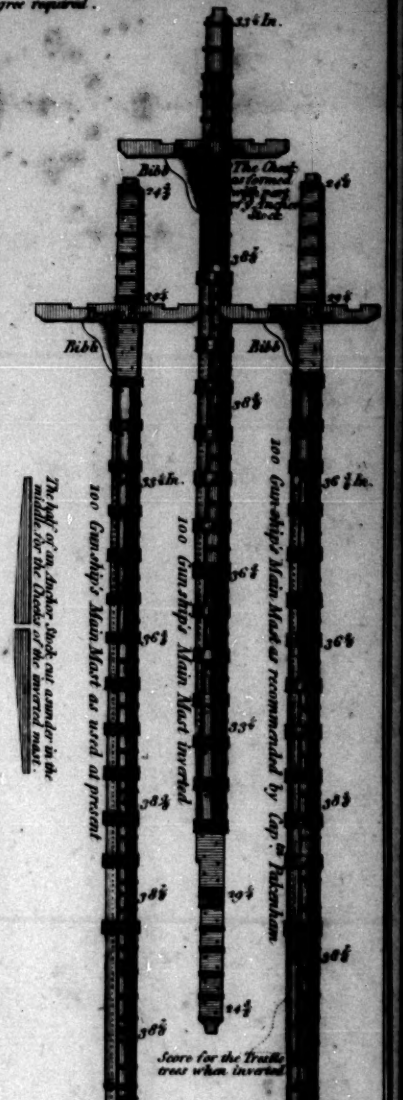
Substitute for a Rudder when lost.



The rudder is made to sink by Pigs of Iron, by Ballast, or by an Anchor, at the lower part; which are removed when it is fixed.

Method of restoring Masts when wounded by inverting them.

*If the wound is within such a distance from the head as is beneath the deck, the mast when inverted, will be as good as new; as it may be fished and secured to any degree required.



When the Mast is making, the Tenon at the Heel should be made to fit the square hole in the Cap. And when inverted, by letting in the Trestle Trees one third of their thickness, a bed is formed for bolting them to the mast; and one of the two peices of Oak that form the Anchor Stock, if sawed asunder in the middle, will when fayed, and bolted on the Thwart ship sides of the mast, make Checks & steps to support the Trestle Trees.

METHOD of Steering with the Wheel from the upper tiller in cases when the lower tiller is broken. Viz. Three-decked Ships are fitted with a block in mid ships, under the upper deck (the same as is fixed under the middle deck) that the upper tiller may be connected to the Wheel by ropes leading from the Wheel, through the Block under the upper deck, thence through a Block fixed in the side, and thence to the upper Tiller.

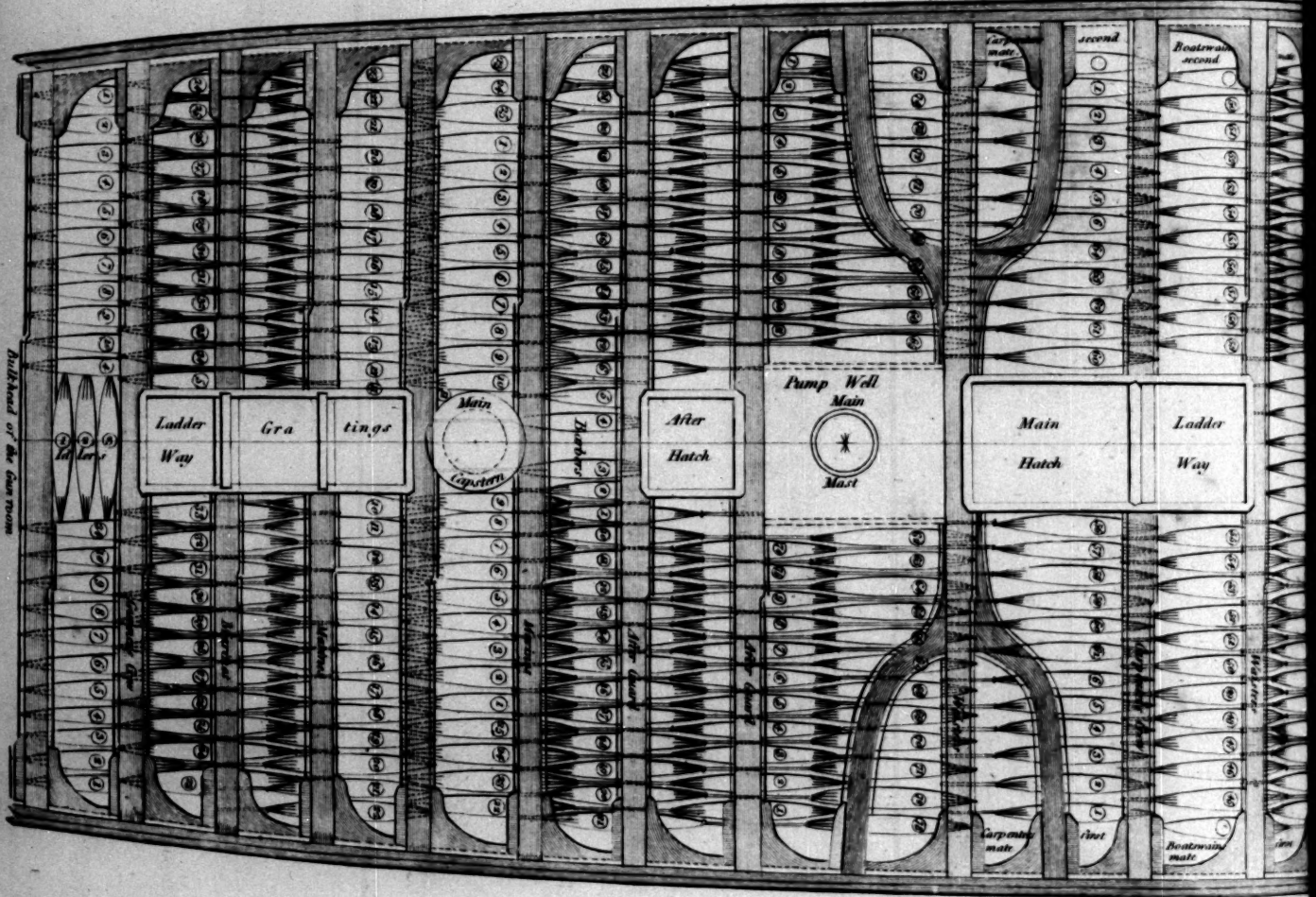
All three decked Ships are, by order of the Admiralty, to be fitted with a Block for this purpose.

Scale of 10 Feet

1 2 3 4 5 10

and one of the two peices of Oak that form the Anchor Stock if sawed asunder in the middle will when raised, and bolted on the Thwart ship sides of the mast, make Cheeks & stops to support the Trestle Trees.

A PLAN OF THE UPPER DECK OF S
from the Manger forward to the Bulk head of the Gun-R
HAMMOCKS for
By which all other Ships m



In the above Plan the beams of the upper deck are shewn, to which the Hammocks are supposed to be suspended; for which purpose battens (which are long peices of Oak one Inch and a quarter thick and one Inch and a half deep) are nailed along the lower edges of the upper deck beams, as represented by the faint lines in the Plan. These battens are kept three quarters of an Inch from the beams by pieces of Elm board. The Hammocks are slung by laniards passing through the grommets & over the battens alternately & there fastened by two half hitches. The after laniards are fastened to the battens on the after-sides of the beams, and the fore laniards to those on the fore-sides of the beams; and thus the strain keeps the battens more firmly in their places.

To avoid the confusion generally incidental in removing & replacing of Hammocks, it is recommended to mark them with figures in Circles, that the mens different divisions may be instantly discernible.

The four Hammocks forward are for the Yeoman of the nippers and his mates.

The next 25 aft on each side are for the forecastle men. The Circle to be black with white figures.

The next 15 on each side are for the fore top men. The Circles to be red with black figures.

The next 43 on each side are for the main top men. The Circles to be blue with white figures.

The next 75 Hammocks numbered in succession on each side are for the waisters. The Circles to be yellow with white figures.

EXPLA TIO

Close in on the Starboard side, and abreast the hatch a
at Arms.

In midships between the main ladder way and capsten
and his mates.

Close in on the starboard and larboard sides abreast
mocks for the two boatswains mates.

The Carpenters crew is abreast the main hatch each
Thus it may be observed that the master at arms boatswain
intermixed with the waisters.

The next 25 on each side are for the after guard. Circles to
The next 34 on each side are for the marines. The to be
The next ten on each side are for the gunners Circles
There are abaft the ladder way in midships, three mocks
Larboard side.

For the greater perspicuity, this plan is drawn all 16 Inch
if the complement of men be full, only 14 Inches for Hammock

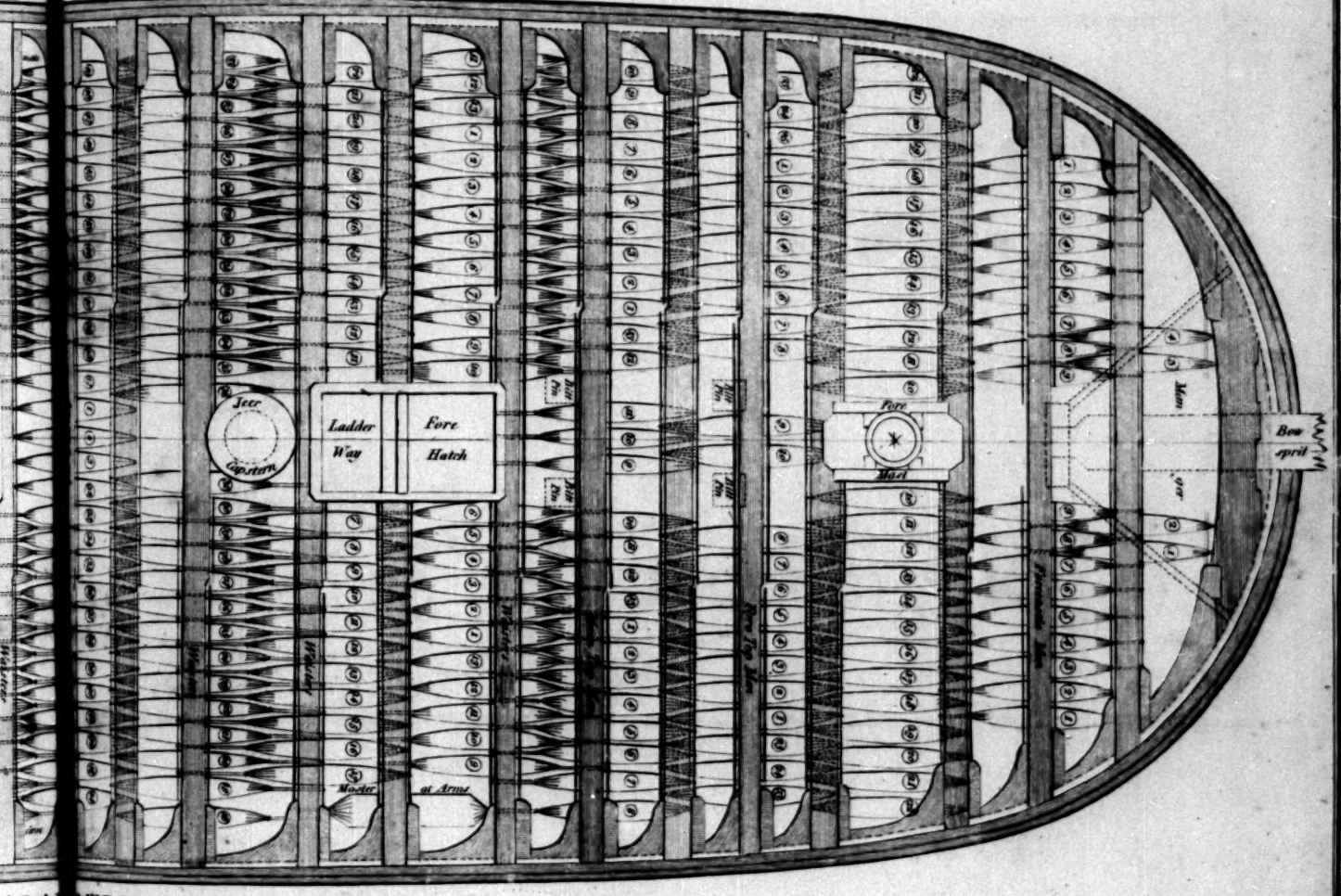
Published as the Act directs, [illegible]

SEVENTY-FOUR GUN SHIP,

ne Gun-Room aft, delineating an Arrangement of the

KS for the CREW.

er Ships may be regulated.



XPLANATION

breast the hatch and ladder way is a Cot for the master

way and capstern, are three Hammocks for the Armourer

rd sides abreast the main ladder way are two Ham-

n hatch w each side. The Circles white with red figures.

e at arms atswains mates, and the Carpenters crew, are

er guard Circles to be black with red figures.

rines. The to be red with white figures.

unners are Circles to be blue with red figures.

ships, thre mocks for Idlers, and two abreast of it on the

drawn all 16 Inches in width for every Hammock; but

nches for e Hammock can be allowed.

It may be satisfactory to add the Officers Births

An Admiral, when on board, is under the poop on the quarter deck.

A Captain under the quarter deck; on the upper deck.

Lieutenants, masters, and marine Officers, are in the wardroom in large ships, and in the gun room in small ones, except the sixth Lieutenant and Gunner, who are in the Gun room.

The Surgeon and Purser are in the Cockpit or Gun room.

The Boatswain and Carpenter are under the forecastle in large ships, the Boatswain on the larboard side, the Carpenter on the starboard side: Sometimes in War, the Boatswain uses his block room, & the Carpenter his pitch room. In small ships their cabins join the Gun room.

Midshipmen, masters mates, and quarter masters, in large ships, are in the Cable tier. In small ships midshipmen and masters mates are on the lower deck, next to the warrant Officers cabins.

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TABLES.

OF THE

QUANTITIES AND DIMENSIONS

OF THE

Standing and Running Rigging.

TABLES

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
SHIPS OF 110 AND 100 GUNS,
Being respectively of 2290 and 2164 Tons Burthen.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding — — —	3¼	190					
Gammonings, 2 — — —	8	160					
Shrouds fine, 2 Pair — —	8	39	Hearts	14	4	4	4
Collars fine, 4 No. — —	6½	12	Hearts	14	4		
Seizings, 4 — — —	1	16					
Lashings, 4 — — —	2	12					
Lanyards fine, 4 —	3½	20					
Bobstays cabled fine 3 Pair —	8	38	Hearts	14	3		
Collars fine No. 3 — —	8½	9	Hearts	14	3		
Seizings, 3 — —	1½	30					
Lashings, 3 — —	2	9					
Lanyards fine, 3 — —	4	18					
Horses, 2 — — —	5	22					6
Straps, 2 — — —	3½	3½					4
Lanyards, 2 — —	2	8					
SPRITSAIL.							
Horses, 2 — — —	4	13					
Stirrups, 6 — —	3	6					6
Braces, 2 — — —	3½	75	Double	12	4		
Pendants, 2 — —	4	5	Single	12	4		
Strapping — —	3½	10					
Lifts, 2 — — —	3	58	Single	12	4		
Beckets, 2 — — —	3	4					
Strapping — —	4	4					
Seizing — —		9					
Standing, 2 — — —	4	10					4
Straps, 2 — —	4½	4					
Lanyards, 2 — —	2	6					
Hallyard — — —	3½	40	Long Tackle	24	1	1	1
			Single	12	1		
Strapping — —	4	3					
Seizing and Lashing		6					
Slings, 1 Pair — —	6	6					
Seizing and Racking	1	10					
Clew-Lines, 2 — — —	2½	45	Strap bound	10	4		
			Single	10	2		
Strapping — —	3	6					
Buntlines, 2 — —	2	34	Single	8	2		
Strapping — —	2	1					
Earings, 4 — —	1	12					
Sheets cabled fingle, 2 —	5	40					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
JIBB.							
Horses, 1 — — —	4	20					
Seizings, 2 — —		½	of a Tar'd Line				
Guy Pendants, 1 Pair — —	4½	34	Single	13	2		
Falls, 2 — — —	3	36	Single	11	4		
Strapping — — —	4	1½					
	3	2					
Lashers, 4 — —	1	14					
Out-Haller — —	4	12					
Tackle-Fall — —	3½	30	Single	9	2		
Strapping — —	2½	1					
Stay — — — —	4½	33	Single	14	1		
Strapping — —	4½	1					
Tacklefall — —	2½	26	Double	9	1		
			Single	9	1		
Strapping — —	2½	1					
Hallyard — — —	4	46	Single	13	1		
Strapping — —	4	1					
Downhaller — —	2½	40	Single	9	1		
Sheets fingle, 2 — —	3½	50	Single	11	2		
Pendants, 1 Pair — —	4½	12	Single	11	2		
SPRITSAIL TOPSAIL.							
Horses, 2 — — —	3	9					
Braces, 2 — — — —	2½	54	Single	9	2		
Strapping — —	2½	1					
Lifts fingle, 2 — —	2½	40	Single	9	2		
Strapping — —	2½	1					
Hallyard — — —	2½	32	Single	9	2		
Strapping — —	2½	2½					
Lashing — —		6					
Parrel-Ropes, 2 — —	2½	5	Parrel	12	1		
Clewlines, 2 — — —	2	46	Single	7	4		
Strapping — —	2	2					
Lacing and Earings, 2 —	1	40					
FORE-MAST.							
Woolding — — —	3¼	290					
Girdlines, 2 — — —	5	80	Single	16	2		
Strapping — —	5	2					
Seizing — —	2½	7					
Lashings, 2 — —	2½	18					

110 and 100 Gun Ship. 2290 and 2164 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 2 Pr.	11	19	Sin. Coaked	24	2		8
Strapping — —	7½	4					
Seizing — —	1	8	Double				
Runners of Tackles, 4 —	7½	36	Thin Coak	21	4		
Strapping — —	6	6					
Falls of Tackles, 4 — —	4	200	Single	26	4	4	4
			Thin Coak	14	4	2	2
Strapping —	5½	10					
Seizing — —	1	45					
Shrouds cabled fine, 7 Pair —	11	225	Dead Eyes	17	20		
Seizings Eye, 6 — —	1¾	50					
Throat, 14 — —	1¾	100					
End, 14 — —	1¾	100					
Lanyards fine, 14 — —	5½	120					
Ratling — — —	1½	350					
Stay cabled fine 4 Strands —	18	15	Heart	26	1		
Seizings, 3 — —	2	25					
Lanyard fine — —	6	17					
Collar cab. 4 Str. fine doub.	9½	8½	Heart	26	1		
Seizings, 2 — —	1¾	12					
Lashing — —	2¾	6					
Preventer Stay cabled 4 Str. fine	11½	15	Heart	16	1		
Lanyard fine —	4½	10					
Coll. cab. 4 Str. fine double —	6½	7	Heart	16	1		
Lashing —	2¾	6					
Seizings, 2 —	1½	18					
Catharpin Legs, 4 — —	7	14					
Seizings, 8 —	1¾	60					
Crowfoot for the Top — —	1½	130	Euphro	34	1		
Tackle — —	2	10					
Strapping	2	1½					
Jeers { Tye — — — / Falls, 2 — — }	7½	126	Treb. Coak	26	2		
			Doub. Coak.	26	2		
Strapping — — —	8½	24					
Seizing — — —	2	32					
Lashing at the Mast Head —	4½	40					
Yard — —	3½	12					
Stoppers, 2 — —	6	6					
Horses, 2 — — — —	5½	16					2
Stirrups, 6 — — —	4	15					8
Seizings, 4 — — —	¾	18					
Lanyard — — —	2	6					
Yard Tackle Pendants, 2 —	7	10	Do. thin Co.	17	2		
Falls, 2 — —	3½	106	S. thin Coak.	20	2	2	2
			Single	13	2		
Strapping — —	5½	9					
Seizing — —	1	16					
Inner Tric. Lines, 2	2½	40	Single	8	2		
Outer Tric. Lines, 2	2	40	Single	7	4		
Strapping — —	2	6					
Braces, 2 — — —	4½	110	Single Coak.	16	4		
Pendants, 2 — — —	5½	10	Single Coak.	16	2		
Preventer, 2 — —	4½	11					
Strapping — — —	5	5					
Seizing — — —	¾	18					
Lashing — — —	1¾	24					
Preventers *(in War only)* 2	3½	96	Single	13	4		

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
FORE-MAST CONTINUED.							
Braces Preventer Strapping —	3	3					
Seizing — —	¾	10					
Lifts, 2 — — — —	4½	108	Single	16	6		
Span for the Cap — —	6½	8					
Short Span — — —	4½	2½					
Strapping — — —	5	5					
Seizing — — —	¾	18					
Jigger Tackle, No. 2 —	2½	30	Double	10	2		
			Single	10	2		
Strapping —	3½	4					
Truss Pendants, 2 — — —	8	17					4
Falls, 2 — — —	3	56	Double	11	4	4	4
Strapping — —	3½	4					
Eye Seizings, 2 —	1½	14					
Nave Line — —	2	20	Sine	7	1		
Puddening the Yard — worn	6½	12					
Clew-garnets, 2 — — —	4	70	Sin. Strapbo.	15	4		
			Single	15	2		
Straps ab. the Yard	4	8					
Strapping — —	4	2					
Seizing — —	¾	18					
Lashing — —	1	14					
Buntline Legs, 4 — — —	3	48	Double	11	4		
Falls, 2 — — —	3	48	Single	10	8		
Strapping — — —	3½	12					
Leechline Legs, 2 — — —	2½	50	Double	11	4		
Falls, 2 — — — —	2½	50		10	8		
Strapping — — —	3½	12					
Slablines, 2 — — —	2½	40	Single	9	2		
Strapping — — —	2½	1					
Bowlines, 2 — — — —	4½	60	Single	16	4		2
Bridles, 2 — — —	4½	6					
Strapping — — —	4½	4½					
Seizing — — —	¾	12					
Lashing — — —	2½	12					
Earings, 6 — — — —	2	28					
Sheets Cabled, 2 — — —	7	84	Sin. Coaked	24	2		2
Strapping — — —	7½	4½					
Seizing — — —	1	14					
Stoppers, 2 — — —	5½	4					
Tacks Taper and Cabled, 2 —	9½	48	Shouldered	26	2		
Strapping — — —	6½	6					
Seizing — — —	1½	8					
Stoppers, 2 — — —	6	5				2	2
Lanyards, 2 — —	2	5					
Gammoning the Bumkin, worn —	4½	16				2	6
Lanyards, 2 — — —	2	12					
Lany. for Pudden & Dolphin —	1½	10					4
Slings, 1 Pair — — —	12	9					1
Strap — — —	12	4					1
Seizings, 2 — — —	2	18					
Lanyard — — —	3½	7					
Stay sail Hallyard — —	4	30	Single	13	2		
Sheets, 2 — — —	4	30	Single	13	2		
Tack — — —	3½	2					
Downhaller — —	2½	28	Single	9	1		
Strapping — — —	4	4					
	2½	1					

110 and 100 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Studd. Sail Hallyard, Inner, 2 Pr.	3	48	Single	12	6		
Outer, 2 Pr. —	3½	88	Single	12	4		
Sheets, 2 Pr. — — —	3	15					
Tacks, 2 Pr. — — —	3½	68	Single	12	2		
Strapping — — —	3½	16					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair —	5½	7					2
Falls, 2 — — —	2½	60	Double	11	2	2	2
			Single	11	2	2	2
Strapping — — —	3½	4					
Shrouds fine 4 Pr. — —	7	114	Dead Eyes	11	12		
Seizings Eye, 4 — —	1	24					
Throat, 8 — —	1	42					
End, 8 — — —	¾	36					
Lanyards fine, 8 — —	3½	60					
Ratling — — — —	1	150					
Standing Backſtays fine 3 Pr. —	7	156	Dead Eyes	11	6		
Seizings Eye, 3 —	1	16					
Throat, 6 —	1	28					
End, 6 —	¾	24					
Lanyards fine, 6	3½	30					
Breaſt Backſtay Runners, 2 —	5	9	Single	14	2		
Falls, 2 — —	2½	20	Double	10	4		
Strapping — —	3	3					
Stay Cabled 4 Strands fine —	8½	24					
Collar fine — —	6½	3½	Single	20	1		
Tackle — — —	3½	24	Long Tackle	24	1		
			Single	14	1		
Strapping — —	5	3					
Seizing — — —	1½	6					
	¾	6					
Preventer Stay cab. 4 Str. fine —	6½	24					
Collar, fine — —	5	3	Single	16	1		
Tackle — —	3	24	Long Tackle	18	1		
			Single	12	1		
Strapping — — —	4	3					
Seizing — — —	1	6					
Laſhing the Col.	2½	6					
Shifting Backſtays, fine, 1 Pair —	7	40					2
Tackles 4 No. — —	3	48	Double	12	4	4	4
			Single	12	4	4	4
Strapping — — —	4	8					
Futtock Shrouds, fine, 4 Pair —	7	42	Plates with Dead Eyes	11	12	12	12
Seizing Upper, 8 —	1	48					
Lower, 8 —	¾	42					
Ratling — —	1½	50					
Top Rope Pendants, fine, 2 —	9	42	S. Braſs Shiv. Iron Bound	26	2		2
Falls, 2 — — —	5	140	Treb. Ir. Bo. Coaked	22	4		
Tye — — — —	6	44	Flat Side	20	2		
			Doub. Coak.	20	1		
Strapping — — —	6½	8					
Seizing — — — —	1	12					
Laſhers at the Maſt Head, 2	2½	15					
Yard — — —	2	5					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2 — — —	3½	130	Do. thin Co.	26	2		
			Sin. Ditto	26	2	2	2
Strapping — — —	5	8					
Seizing — — — —	¼	18					
Horſes, 2 — — —	4	12					
Stirrups, 6 — —	3	8½					6
Braces, 2 — — —	3½	104	Single	14	4		
Pendants, 2 — —	4½	9	Single	14	2		
Preventer, 2 — —	4	10					
Strapping — —	4	5					
Lifts, 2 — — — —	3½	72	Double	12	2		
			Single	12	4		
Beckets, 2 — —	4	3					
Strapping — —	4	8					
Seizing — — —	¾	20					
Parrel Ropes, 2 — —	3½	14	Parrel	24	1		
Racking and Seizing —	1	20					
Clewlines, 2 — — — —	4	90	Sin. Str. bo.	14	4		
			Single	14	2		
Strapping — —	4	8					
Buntlines, 2 — — —	3	72	Single	11	4		
Strapping — —	3	3					
Leechlines, 2 — — —	2½	34	Single	10	2		
Strapping — —	2½	1					
Bowlines, 2 — — —	3½	68	Single	12	2		2
Bridles, 4 — — —	3½	14					2
Strapping — —	3½	2					
Laſhing — —	1½	12					
Reefſtackle Pendents, 2 —	4	44	Double	9	4	2	2
Falls, 2 — — —	2½	66					
Strapping — —	3	3					
Earings, 10 — — —	1½	40					
Sheets, 2 — — — —	8	55	Sin. Shoul.	26	2		
			¼ do. th & thin Coaked	26	2		
Straps for Sheet Blocks, 2	8	5					
Quarter Blocks, 2 —	6	10					
Laſhers for Quarter Blocks, 2	2½	10					
Seizings, 2 — — —	1½	24					
Span — — — worn	3½	10					
Stoppers, 2 — — —	6½	5					
Slings, 1 Pair — —	5	12					
Stayſail Stay — —	4	24	Single	13	1		
Tackle — —	2½	15	Double	10	1		
			Single	9	1		
Hallyard — — —	3½	40	Single	12	1		
Strapping — —	3½	1½					
Sheets, 2 — —	4	34	Single	13	2		
Strapping — —	4	1½					
Outhaller — —	2½	21	Single	9	1		
Downhaller — —	2½	30	Single	9	1		
Strapping — —	2½	2					
Studdingſail Hallyards, 2 Pair —	3½	96	Single	12	6		
Sheets, 2 Pair — —	5	50	Single	12	2		
Tacks, 2 Pair — —	3½	74	Single	12	4		
Downhallers, 2 — —	2	64	Single	9	2		6
Boom Tackles, 2 —	2	80	Double	8	2		
			Single	8	4		
Tails and Straps, 2 —	3½	18					
	2½	6					

110 and 100 Gun Ship. 2290 and 2164 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	4	82					12
Lanyards, 6 — — —	2	12					
Standing Backstays, 2 Pair —	4	93	Dead Eyes	7	4		
Lanyards, 4 — — —	2	20					
Stay cabled 4 Strands — —	4½	32	Single	12	1		
Strapping — — —	3½	1½					
Tackle — — —	2	18	Double	7	1		
			Single	7	1		
Strapping — — —	2½	1½					
Flagstaff Stay — — —	2	30					1
Hallyards, 1 Pair — —	1½	72					
Tye — — — — —	4	17					
Hallyard — —	2	30	Double	8	1		
			Single	8	2		
Strapping — — —	2½	1½					
Horses, 2 — — — —	3	9					
Braces, 2 — — — — —	2	114	Single	8	6		
Pendants, 2 — — —	3	10	Single	8	2		
Strapping — — —	2	4					
Lifts single, 2 — — —	2½	60	Single	8	2		2
Strapping — — —	2½	1½					
Parrel Ropes, 2 — — —	2	5	Parrel	12	1		
Clewlines, 2 — — —	2	76	Single	7	6		
Strapping — — —	2	4					
Bowlines, 2 — — — —	2	75	Single	7	2		4
Bridles, 2 — — —	2	5					2
Strapping — — —	2	2					
Earings, 2 — — —		2	Tarr'd Lines				
Shifting Backstays, 1 Pair —	4	46					
Tackles, 2 No. —	2	20	Double	7	2	2	2
			Single	7	2	2	2
Strapping — —	2	1½					
Studdingsail Hallyards, 2 Pair —	2½	80	Single	7	6		
Sheets, 1 Pair — —	2	23					
Tacks, 2 Pair — —	2	50	Single	7	4		
Downhallers, 2 — —	1½	22					1
Strapping — — —	2	8					
MAIN-MAST.							
Woolding — — —	3½	350					
Girdlines, 2 — — —	5	84	Single	16	2		
Strapping — — —	2	5					
Seizing — — —	¼	7					
Lashings, 2 — — —	2½	18					
Pendants of Tack. cab. fine, 2 Pr.	11	20	Sin. Coak.	24	2		8
Strapping —	7½	4					
Seizing —	1½	8					
Runners of Tackles, 4 — —	7½	40	Do. thin Co.	21	4		
Strapping — —	6	6					
Falls of Tackles, 4 — — —	4	210	Sin. thin Co.	26	4	4	4
Strapping — —	5½	10					
Seizing — —	1	40					
Shrouds cabled. fine, 7 Pair —	11	255	Dead Eyes	17	20		
Seizings Eye, 6 — —	1½	50					
Throat, 14 — —	1½	100					
End, 14 — — —	1½	100					
Lanyards, fine, 14 — —	5½	120					
Ratling — — — —	1½	380					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Stay cabled 4 Strands, fine —	19	22	Heart	26	1		
Seizings, 4 — — —	2	25					
Lanyard, fine — —	6	20					
Collar cabled 4 Strands, fine	14	12	Heart	26	1		
Worming — —	2	60					
Seizings, 3 — —	2	20					
Lashing — — worn	4	25					
Preventer Stay cab. 4 Strands fine	13	20	Heart	17	1		
Lanyard, fine —	5	10					
Col. cab. 4 str. fine. do.	6	6	Heart	17	1		
Lashing — —	2	8					
Seizings, 3 — —	1½	20					
Catharpin Legs, 4 — —	7	18					
Seizings, 8 — —	1½	60					
Stay Tackle Pendant — —	6	5	Do. thin Co.	18	1		
Fall — — —	3½	46	S. thin Co.	20	1	1	2
				14	1	1	1
Strapping — —	4½	3½					
Seizing — —	¾	12					
Lashing — —	1½	12					
Fore-Stay Tackle Fall — —	3½	46	Do. thin Co.	18	1		
			S. thin Co.	20	1	1	2
				14	1	1	1
Strapping —	4½	3½					
Seizing —	¾	12					
Crowfoot for the Top — —	1½	145	Euphro	36	1		2
Tackle — — —	2	10					
Strapping — —	2½	1½					
Jeers Tye — — —	8	140	Treb. Coak.	28	2		
Falls, 2 — — —			Doub. Coak.	28	2		
Strapping — — —	9	24					
Seizing — — — —	2	32					
Lashers to the Mast Head, 2	4½	45					
Yard — —	3½	12					
Stoppers, 2 — — —	6	6					
Horses, 2 — — —	5½	18					
Stirrups, 6 — — —	4	16					
Seizings, 4 — — —	¾	18					
Lanyard — — —	2	6					
Yard Tackle Pendants, 2 —	7	11	Do. thin Co.	17	2		
Falls, 2 — —	3½	120	S. thin Co.	20	2	2	2
			Single	13	2		
Strapping — —	5½	9					
Seizing — —	1	16					
Inner Tricing-Lines, 2	2½	42	Single	8	2		
Outer Tricing-Lines, 2	2	42	Single	7	4		
Strapping — —	2	6					
Braces, 2 — — —	4½	108	Sin. Coak.	16	2		
Pendants, 2 — —	5½	10	Sin. Coak.	16	2		
Preventer, 2 — —	4½	11					
Strapping — —	5	4					
Seizing — — —	¾	10					
Preventers *(in War only)* 2	3½	100	Single	13	4		
Strapping — —	3½	3					
Seizing — — —	¾	10					
Lifts, 2 — — — —	4½	124	Single	16	6		
Span for the Cap — —	6½	9					
Short Span — —	4½	2½					

110 and 100 Gun Ship. 2290 and 2164 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — — —	5	5					
Seizing — — —	1/4	18					
Jigger Tackles, 2 —	2 1/2	30	Double	10	2		
			Single	10	2		
Strapping — —	3 1/2	4					
Truss Pendants, 2 — —	8	18					4
Falls, 2 — — —	3	64	Double	11	4	4	4
Strapping — —	3 1/2	4					
Eye Seizings, 2 —	1 1/2	14					
Nave-Line — — —	2	22	Single	7	1		
Puddening the Yard — worn	6 1/2	14					
Clewgarnets, 2 — — —	4	82	Strapbound	15	4		
			Single	15	2		
Strap about the Yard —	4	10					
Strapping — —	4	2					
Seizing — —	1/4	18					
Lashing — — —	1	14					
Buntline Legs, 4 — —	3	52	Double	11	2		
Falls, 2 — —	3	60	Single	11	10		
Strapping — —	3 1/2	12					
Leechline Legs, 2 —	2	54	Double	11	4		
Falls, 2 — —	2	50	Single	10	10		
Strapping — —	3 1/2	13					
Slablines, 2 — —	2	42	Single	9	2		
Strapping — —	2	1					
Bowlines, 2 — —	4	60	Double	16	1		4
Bridles, 4 — —	4	16					2
Strapping — —	4	4					
Seizing — —	1/4	4					
Lashing — — —	2	4					
Tackle — — —	3	16	Long Tackle	20	1	1	1
			Single	11	1	1	1
Strapping — —	3 1/2	3					
Earings, 6 — —	2	28					
Sheets, cabled, 2 — —	7	96	Sin. Coak.	24	4		4
Strapping — —	7	10					
Seizing — — —	1 1/2	16					
Lashers, 2 — —	2	6					
Stoppers, 2 — — —	6	4					
Tacks Taper and Cabled, 2 —	10	48					
Stoppers, 2 — — —	6	4				2	2
Lanyards, 2 — —	2	6					
Lany. for the Pudden & Dolphin —	1 1/2	10					4
Slings, 1 Pair — — —	12	10					1
Strap — — — —	12	4					1
Seizing — — —	2	18					
Lanyard — — —	3 1/2	7					
Quarter Tackle Pendants, 2 —	6	10	Do. thin Co.	18	2		
Falls, 2 — —	3 1/2	86	S. thin Co.	20	2	2	2
			———	14	2	2	2
Strapping — —	5	9					
Seizings, 3 — —	1	14					
Luff Tackles, 4 No. — —	3 1/2	180	Double	13	6	6	6
			Single	13	6	6	6
Strapping — —	4	12					
Seizing — — —	3/4	32					
Stayfail Stay — — — worn	5	15					2
Collar — — —	4	2					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayfail Collar Seizing — —	1	6					
Lanyard — —	1 1/2	4					
Hallyard, 1 — — —	3	40	Single	11	3	1	1
Sheets, 2 — — —	4	14	Single	14	2	1	1
Tacks, 2 — — —	4	5					
Downhaller — — —	2 1/2	20	Single	9	1		
Strapping — — —	4	1 1/2					
	3	2					
Studd. sail Hallyards, Inn. 2 Pr.	3	62	Single	12	6		
Outer, 2 Pr. —	3 1/2	100	Single	12	4		
Sheets, 2 Pair — —	3	34					
Tacks, 2 Pair — —	3 1/2	54	Single	12	2		
Strapping — — —	3 1/2	16					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	5 1/2	7 1/2					2
Falls, 2 — — —	2 1/2	60	Double	11	2	2	2
			Single	11	2	2	2
Strapping — — —	3 1/2	4					
Shrouds, fine, 4 Pair — —	7	123	Dead Eyes	11	12		
Seizings Eye, 4 — —	1	24					
Throat, 8 — —	1	42					
End, 8 — — —	3/4	36					
Lanyards, fine, 8 — —	3 1/2	60					
Ratling — — —	1	154					
Standing Backstays, fine, 3 Pr. —	7	172	Dead Eyes	11	6		
Seizings Eye, 3 —	1	16					
Throat, 6 —	1	28					
End, 6 —	3/4	24					
Lanyards, fine, 6	3 1/2	30					
Breast Backstay Runners, 2 —	5	9	Single	14	2		
Falls, 2 — — —	2 1/2	20	Double	10	4		
Strapping — —	3	3					
Stay Cabled 4 Strands, fine —	8 1/2	25					
Collar, fine — — —	7	4	Single	20	1		
			Long Tackle	24	1		
Tackle — — —	3 1/2	24	Single	14	1	1	1
Strapping — — —	4 1/2	4					
Seizing — — —	1 1/2	6					
	1/4	6					
Lashing — — —	2	7					
Preventer Stay, Cabled 4 str. fine	6 1/2	24 1/2					
Collar, fine —	5	3	Single	16	1		
			Long Tackle	18	1		
Tackle — —	3	24	Single	12	1	1	1
Strapping —	4	3					
Seizing — —	1	8					
Lashing the Col. —	1 1/2	7					
Shifting Backstays, fine, 1 Pair —	7	42					2
Tackles, 4 No. —	3	48	Double	12	4	4	4
			Single	12	4	4	4
Strapping — —	4	8					
Futtock Shrouds, fine, 4 Pair —	7	45	Pla with D.E	11	12	12	12
Seizings Upper. 8 —	1	48					
Lower, 8 —	3/4	42					
Ratling — —	1 1/2	55					
Top Rope Pendants, fine, 2	9	46	Sin. I. bound Brass Shiv.	26	2		2

110 and 100 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks &c. Species.	Inches.	Numb.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2	5	146	Treb. I. bo.	22	4		
Tye	6	46	Flat Side	22	2		
			Double	22	1		
Strapping	6½	8					
Seizing	1	12					
Laſhers at the Maſt Head, 2	2½	15					
Yard	2	5					
Hallyards, 2	3½	140	Do. thin Co.	26	2		
			S. thin Co.	26	2	2	2
Strapping	5	8					
Seizing	¾	18					
Horſe, 2	4½	13					
Stirrups, 6	3	9					6
Braces, 2	3½	88	Single	14	2		
Pendants, 2	4½	9	Single	14	2		
Preventers, 2	4	10					
Span ab. the Mizen Maſt	4½	6					
Strapping	4	3					
Lifts, 2	3½	80	Double	12	2		
			Single	12	4		
Beckets, 2	4	3					
Strapping	4	8					
Seizing	¾	20					
Parrel Ropes, 2	4	15	Parrel	25	1		
Racking and Seizing	1	20					
Clew-lines, 2	4	104	Sin. Str. Bo.	14	4		
			Single	14	2		
Strapping	4	8½					
Bunt-lines, 2	3	76	Single	11	6		
Strapping	3	4					
Leech-lines, 2	2½	38	Single	10	2		
Strapping	2½	1					
Bowlines, 2	4½	70	Single	15	2		2
Bridles, 4	4½	18					4
Strapping	4½	2½					
Seizing	¾	6					
Frapping and Laſhing	2	12					
Reeftackle Pendents, 2	4	50	Double	9	4	2	2
Falls, 2	2½	80					
Strapping	3	3					
Earings, 10	1½	45					
Sheets, 2	8½	60	Sin. Shoul.	26	2		
			¼ Double	26	2		
Straps for Sheet Blocks, 2	8½	5	Thick & thin				
Quarter Blocks, 2	6	10					
Laſhers for Quart. Blocks, 2	2½	10					
Seizings, 2	1½	24					
Span worn	3½	12					
Stoppers, 2	6½	5					
Slings, 1 Pair	5	14					
Stayſail Hallyard	3½	46	Single	13	1		
Strapping	4	1					
Sheets, 2	3	60	Single	11	2		
Strapping	3	2					
Pendant	4	4	Single	12	2		
Tack	3	5					
Downhaller	2½	27	Single	9	2		
Strapping	2½	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks &c. Species.	Inches.	Numb.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2	2	42	Single	7	2		2
Middle Stayſail Stay	4	22	Single	13	1		
Tackle	2	24	Double	8	1		
			Single	8	1		
Hallyard	3½	44	Single	12	1		
Sheets, 2	3½	40		12	2		
Tack	3	5					
Downhaller	2½	30	Single	9	2		
Strapping	3	6					
	3	2					
Tricing-line	2½	18	Single	9	1		
Studdingſail Hallyards, 2 Pair	3½	106	Single	12	6		
Sheets, 2 Pair	3	52	Single	1	2		
Tacks, 2 Pair	3½	74	Single	12	4		
Downhallers, No. 2	2	68	Single	9	2		6
Boom Tackles, 2 No.	2	84	Double	8	2		
			Single	8	4		
Laſh. for Booms worn	2½	20					
Tailing and Strapping	3½	18					
	2½	6					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair	4	89					12
Lanyards, 6	2	12					
Standing Backſtays, 2 Pair	4	100	Dead Eyes	7	4		
Lanyards, 4	2	20					
Stay cabled 4 Strands	4½	26	Single	13	1		
Strapping	3½	1					
Flagſtaff Stay	2	30					1
Hallyards, 1 Pair	1½	80					
Tye	4	19					
Hallyard	2	36	Double	8	1		
			Single	8	2		
Strapping	3½	1½					
Horſes, 2	3	10					
Braces, 2	2	82	Single	8	2		
Pendants, 2	3	10	Single	8	2		
Strapping	2	3					
Lifts ſingle, 2	2½	65	Single	8	2		
Strapping	2½	1½					
Parrel Ropes, 2	2	5	Parrel	12	1		
Clewlines, 2	2	80	Single	7	6		
Strapping	2	4					
Bowlines, 2	2	76	Single	7	2		
Bridles, 4	2	8					2
Strapping	2	1					
Earings, 4	2	Tarr'd Lines					
Shifting Backſtays, 1 Pair	4	50					2
Tackles, 2 No.	2	20	Double	7	2	2	2
			Single	7	2	2	2
Strapping	2½	1½					
Stayſail Stay	3	38	Single	10	1		
Hallyard	2½	50	Single	9	1		
Sheets, 2	2½	50	Single	9	2		
Tack	2	7					
Downhaller	2	34	Single	7	2		
Strapping	2½	1½					
	2	1					

110 and 100 Gun Ship. 2290 and 2164 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingsail Hallyards, 2 Pair	2	84	Single	7	6		
Sheets, 2 Pair	2	48					
Tacks, 2 Pair	2	54	Single	7	4		
Downhallers, 2	1½	46					2
Strapping	2	8					
MIZEN-MAST.							
Woolding	2½	162					
Girdlines, 2	3½	68	Single	12	2		
Strapping	3½	1½					
Seizing	¾	6					
Lashings, 2	1¾	8					
Burton Pendants, 1 Pair	5	8					2
Falls, 2	3	76	Double	11	2	2	2
			Single	11	2	2	2
Strapping	3½	4					
Shrouds, fine, 5 Pair	7	112	Dead Eyes	11	12		
Seizings Eye, 5	1	24					
Throat, 10	1	22					
End, 10	¾	36					
Lanyards, fine, 10	3½	72					
Ratling	1	188					
Stay Cabled 4 Strands, fine	8½	15					2
Seizings, 3	1	8					
Lanyard, fine	3½	6					
Collar, fine	7	3½					1
Seizing	1	3					
Lashing	1½	3					
Crowfoot for the Top	1	80	Euphro	24	1		2
Tackle	1½	5					
Strapping	2	1					
Jeers, 1 Pair	6	52	Treble	22	1		
			Double	22	1		
Strapping	6½	8					
Seizing	1½	10					
Lashing at the Mast Head	3	12					
Yard	2½	6					
Derrick	4½	40	Double	15	1		
Span	4½	4	Single	15	1		1
Strapping	4½	2½					
Seizing	1	12					
Lashing	2	8					
Vang Pendants, 2	4½	14	Double	9	2		
Falls, 2	2½	44	Single	9	2	2	2
Strapping	3	1					
Bowlines, 2	3	24	Single	10	4		2
Strapping	3	3					
Truss Pendant	5	6					2
Fall	2½	20	Long Tack.	18	1	1	1
			Single	9	1	1	1
Strapping	3	3					
Seizing	¾	8					
Brails Peek Legs, 2 Pr.	2	12					
Falls	2	18	Single	7	6		
Middle	2½	24	Single	8	2		
Throat	3	26	Single	10	2		
Middle	2½	24	Single	9	2		
Foot	2½	21	Single	9	2		2

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping	3	1					
	2½	9					
Lacing Mizen to Yard	1½	30					
Mast worn	3	20					
Earings, 2	2	10					
Peek Hallyards, 1 Pair	2	25	Single	7	1		1
			Double	15	1		1
Sheet	4½	32	Single	15	1		
Strapping	4½	3½					
Seizing	1	7					
Tack	3	5					
Slings, 1 Pair	6	6					
Stayfail Stay worn	5	16					2
Collar	4½	3½					1
Seizing	¾	3					
Lashing	1	3					
Lanyard	2	6					
Hallyard	3	34	Single	11	3		
Sheets, 2	3½	15	Single	11	2		1
Tack	2½	4					
Downhaller	2	15	Single	7	2		
Strapping	3½	3					
	2	2					
Brails, 2	2	30	Single	7	2		2
Driver Hallyards, 2 Pair	3½	44	Single	12	4	1	2
Sheets, 2	3½	20	Single	12	2		
Tacks, 2	3½	30	Single	12	2		
Downhaller	2½	24	Single	9	1		
Strapping	3½	7					
Lashing	¾	14					
CROSS-JACK-YARD.							
Span about the Cap	4	2					
Braces, 2	2½	64	Single	9	2		
Pendants, 2	3½	6	Single	9	2		
Preventer, 2	3	7					
Strapping	2½	2					
Lifts Running, 2	2½	55	Single	9	4		
Strapping	2½	3					
Slings, 1 Pair	5½	6½	Sin. do. Scord	16	1		
Strapping	4	2					
Seizing	1	3½					
Lashing	1½	5					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	4½	57	Dead Eyes	8	8		
Seizings, 6		3	Tarr'd Lines				
Lanyards, fine, 2	2½	32					
Ratling	1	70					
Standing Backstays, fine, 1 Pair	4½	63	Dead Eyes	8	4		
Seizings, 4		1	Tarr'd Line				
Lanyards, fine, 2	2½	16					
Stay cabled, 4 Strands, fine	5	14					
Lanyard, fine	2	6					
Collar	4	3	Single	14	1		
Seizing and Lashing	1	6					
Flag-staff Stay	2	14					1
Hallyards, 1 Pair	1½	46					
Shifting Backstays, fine, 1 No.	4½	15					

110 and 100 Gun Ship. 2290 and 2164 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backstay Tackle —	2½	12	Double	9	1	1	1
			Single	9	1	1	1
Strapping — —	3	4					
Futtock Shrouds, fine, 3 Pr. —	4½	18	Plates with Dead Eyes	8	8	8	8
Seizings, 6 — —		2	Tar'd-Lines				
Ratling — —	1	20					
Top Rope Pendants, fine, 2 —	5½	20	Single I. bo.	16	1		1
Falls, 2 — — —	3	44	Double D°	12	2		
Tye — — — —	4	18	Sin. do. Scord	13	1		
Hallyard — —	2½	50	Double thin	12	1		
			Single thin	12	1	1	1
Strapping — — —	3½	4					
Lashing — — —	1	3					
Horses, 2 — — — —	3	10					4
Stirrups, 4 — — —	2½	4					
Braces, 2 — — — —	2½	52	Single	9	2		
Pendants, 2 — — —	3	4½	Single	9	2		
Strapping — — —	2½	1½					
Lifts, 2 — — — — —	2½	54	Double	9	2		
			Single	9	2		
Strapping — — —	3	3					
Parrel Ropes, 2 — —	2½	6	Parrel	16	1		
Clew-lines, 2 — — —	2½	66	Strap bound	9	4		
			Single	9	2		
Strapping — —	2½	4					
Buntline — — —	2	50	Single	8	4		
Strapping — —	2	1					
Leechlines, 2 — — —	2	20	Single	7	2		
Strapping — —	2	1					
Bow-lines, 2 — — — —	2½	44	Single	9	2		2
Bridles, 4 — — —	2½	8					2
Strapping — — —	2½	1					
Reef Tackle Pendants, 2 —	3	36					
Falls, 2 — —	1½	41	Double	7	2		
			Single	7	2		
Strapping — —	2	1					
Earings, 8 — — —	1½	30					
Sheets, 2 — — —	5	40	Sin. Should.	15	2		
			Single	15	1		
Strapping — — —	5	2					
	4	3					
Seizing — — —	¾	14					
Lashing — — —	1½	5					
Stayfail Hallyard — —	2½	30	Single	9	1		
Sheets, 2 — — —	2½	30	Single	9	2		
Tacks, 2 — — —	2	2					
Downhaller — — —	1½	20	Single	6	1		
Strapping — — —	2½	2					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair — — —	2½	42					8
Lanyards, 4 — — —	1½	12					
Backstays, 1 Pair — — —	2½	38					4
Lanyards, 2 — — —	1½	6					
Stay — — — — —	3	14					1
Lanyard — — —	1½	3½					
Tye — — — — —	3	7		5	2		

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard — — —	1½	32	Single	5	2		
Horses, 2 — — — —	2	6					2
Braces, 2 — — — —	1½	45	Single	5	2		
Lifts, single, 2 — — —	2	32					2
Parrel Ropes, 2 — — —	1½	4	Parrel	7	1		
Clew-lines, 2 — — —	1½	50	Single	5	2		
Bow-lines, 2 — — —	1½	48					4
Bridles, 4 — — —	1½	3					
Earings, 2 — — — —	1½	Tarr'd-Line					
Strapping — — — —	2	3					
NECESSARY ROPES.							
Viol Cabled — — —	14	46	Single Coak.	56	1		
Strapping — —	11½	10					
Seizing — — —	2	12					
Lashing — —	4½	10					
Winding Tackle Pendant —	13	13	Co. Fourfold	24	1		
Fall —	5	82	Treble	24	1		
			Single	24	1		
Strapping —	7	18					
Seizing —	1½	20					
Catt Falls, 2 — — —	6	126	Treble I. bo. Brass Shiv.	26	2		
Lanyards, 2 — —	3	30	Sin. 2 large ragged Stap.	10	2		4
Stoppers 2 No. — —	5	6					
Guy's Mast-Head, 2 — —	9½	34					
Fore, 2 — — —	9½	24					
After, 2 — — —	6	28					
Fish Tackle Pendant — —	10	14	Single Coaked	28	1	Fish 1	1
Fall — — —	4½	52	Long Tack.	38	2		
Strapping — —	7	6					
	6½	5					
Seizing — —	1½	10					
	1	10					
Lanyard — —	3	16					
Anchor Stock Tacklefall —	3	30	Double	12	1	1	1
			Single	12	1	1	1
Bill Pendant — — —	5½	12				1	2
Strapping — — —	4	2					
Seizing — — —	¾	9					
Stoppers Sheet Anchor, 2 —	9½	10					
Best Bower, 2 — —	9½	10					
Small Bower, 2 — —	9½	10					
Spare, 2 — — —	9½	10					
Seizings — —	1	36					
Wing cabled, 2 No. —	9	20					
Dog, 2 No. — — —	8	20					
Seizing — — —	1	36					
Stream Anchor, 2 — —	5½	7					
Kedge, 2 — — —	4½	6					
Deck & Bit, cabled, 10 No.	12	36					13
Lanyards, 10 No.	3½	50					
Seizing —	2	49					
	1	49					

110 and 100 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	9½	18					
Ditto = — — —	9	18					
Ditto — — —	8	20					
Ditto — — —	7½	8					
Ditto — — — —	7	8					
Ditto — — — —	6½	12					
Ditto — — —	5½	12					
Ditto — — — —	5	12					
Ditto — — —	4½	6					
Shank painters Sh. Anchor cab.	2 9	12					
Beſt Bower, 2 —	8	8				1	
Small Bower, 2 —	8	8				1	
Spare, Cabled, 2 —	9	12					
Seizing —	1	18					
Ropes Buoy Sheet Anchor cabled	8½	24					
Beſt Bower Cabled —	8½	24					
Small Bower Cabled —	8½	24					
Seizing —	1	18					
Stream Anch. Cabled —	5	38					
Kedge Cabled — —	4	30					
Davit, 2 — — — worn	3½	12					
Bell — — — —	3½	4					
Buckets — — —		1	Coil Laſhing				
Swab, 2 No. — worn	3½	36	Single	12	2		
Entering, 6 No. — —	3½	30					
Paſſing — — —	5	60				2	
Lanyard — — —	2½	12					
Slip — — — —	3½	40					
Quarters, Poop and Stantion in the Waſte, — —	3½	150				16	
Fore, Main & Mizen Tops		1	Coil Laſhing				
Wheel or Tiller White —	4½	30	Single	14	2	2	
Strapping — —	4½	1½					
Seizing — —	1	6					
Puddening of Anchors, worn	4	130	Old Canvas.	yd			
	3	40		20			
Seizings, 4	1½	96					
Slings Buoy, 4 Pair — —	4	56				6	
Lanyards, 3 — worn	3	15					
Seizings, 6 —	1	42					
Gun — — —	8	7					
Nut — — —	7	4					
But, 4 Pair — —	5	20				4	
Hogſhead, 4 Pair — —	4	16				4	
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys — worn	4	6					
Swabs — worn	3½	24					
Cable Bends, 6 No. — —	3	64					
Rudder Pendents, cabled, 2 —	7½	11				4	
Lanyards, 2 —	3	10					
Falls, 2 — — —	3½	50	Long Tackle	28	2 2	2	
			Single	15	2 2	2	
Strapping — —	4½	5					
Seizing — — —	½	12					
Stern Ladders, 4 Strands, 2 worn	6	34					
Middle Rope, 2 worn	2	24					
Laſhing — worn	2	12					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 — —	8	7					
	5	2					
Swifters for Capſton-Bars —	2	60					
Laſhing-Cables between Decks Sheep-Pens, Steep-Tubs, Tubs in the Tops, & Booms		5	Coils Laſhing				
Nettings for the Quart. Waſte, Tops, and Barricadoes —	1½	1000					
Hallyard for Top Lanthorn —	1	30	Single	5	1		
Enſigns — —	2	36					
Jacks — —	1	26					
For Colours Head Line —		4	White-lines				
For Colours Rope Bands —		6 lb	Marlines				
For Colours Pendent Slings —	¾	30					
Awnings Ridge and Side Rope-	3½	130	Single	12	3		
Stops — — —	1	40					
				34	1		
Crowfeet — —	1	160	Euphro	24	1		
				22	1		
Hallyard — —	1½	40					
Ridge Tackle Fall —	2½	10	Double	9	1		
			Single	9	1		
For different Uſes of the Ship			Snatch Iron	24	4	4	4
			Bo. Hooks	16	4	4	4
			Coaked	14	4	4	4
Strapping — —	4½	8					
Seizing — —	¼	30					
LONGBOAT.							
Burton Pendents, 1 Pair — —	4	3½	Single	11	2		2
Runner — — —	3	12					
Falls, 2 — —	2	20	Double	9	2	2	2
			Single	9	2	2	2
Strapping — —	3	3					
Shrouds, 2 Pair — —	4	22	Dead Eyes	5	4		
Lanyards, 4 — —	1½	8					
Stay — — — —	4½	7	Dead Eyes	5	1		
Lanyard — —	1½	2½					
Tye — — — —	3	7	Single	9	1		
Main Hallyard — —	2	18	Single	7	1		
Outer Hallyard —	2	20	Doub. I. bo.	7	1		
			Single	7	1		1
Sheet — — —	2	15	Double	8	1		
			Single	1	1		1
Wood Hoops, 12 No. —							
Downhaller — —	1½	15	Single	5	1		
Strapping — —	2	8					
Topping Lift — —	2½	15					
Fore Hallyard — —	2	16	Single	7	1		
Sheet — — —	2	5					2
Tack — — —	1	1					
Bowline — —	2½	1½					1
Jib Hallyards — —	2	22	Single	7	2	1	1
Sheet — — —	2½	10					4
Outhaller — —	3	10	Iron Trave		1		
Innhaller — —	1	7					
Boat-Rope, cabled — —	9	40					
Lanyard — —	2½	4					

110 and 100 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	5	40					
Grapnel-Rope, cabled — —	4½	50					
Painter — — — —	4	7				1	
Sternfaſt — — worn	3½	12					
Fenders, cabled, 6 — worn	6	14					
Lanyards, 6 — —	2	12					
Rudder Lanyards, 2 — —	2	2½					
PINNACE.							
Hallyards Main and Fore, 2 —	1¾	20					
Sheets, 4 — — —	1¾	20					
Grapnel-Rope, cabled — —	3½	70					
Painter — — —	3½	10					4
Sternfaſt — — worn	2½	20					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5¼	10					8 12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					
YAWL OR CUTTER.							
Hallyards *(if Cutters)* 2 Pair —	2	12	Iron Trave		2		
Sheets, 4 — — —	2¼	8					
	2¼	8					
Grapnel-Rope, cabled —	3½	80					
Painter — — —	3½	10					
Slings, 2 Pair — —	5¼	10					8 12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each: Thus, in Page 1, Article 2, by Gammonings, 2 —| 8 | 160 | is meant, Two Gammonings are neceſſary, made of Rope 8 Inches in Circumference, containing in the Whole 160 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
SHIPS OF 98 AND 90 GUNS,
Being respectively of 2290 and 2164 Tons Burthen.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	3½	190					
Gammonings, 2	8	160					
Shrouds fine, 2 Pair	8	38	Hearts	14	4	4	4
Collars fine, 4 No.	6½	12	Hearts	14	4		
Seizings, 4	1	16					
Lashings, 4	2	12					
Lanyards fine, 4	3½	20					
Bobstays cabled fine 3 Pair	8½	37	Hearts	14	3		
Collars fine No. 3	8½	9	Hearts	14	3		
Seizings, 3	1½	30					
Lashings, 3	2	9					
Lanyards fine, 3	4	18					
Horses, 2	5	22					6
Straps, 2	3½	3½					4
Lanyards, 2	2	8					
SPRITSAIL.							
Horses, 2	4	13					
Stirrups, 6	3	6					6
Braces, 2	3½	74	Double	12	4		
Pendants, 2	4	5	Single	12	4		
Strapping	3½	10					
Lifts, 2	3½	58	Single	12	4		
Beckets, 2	3½	4					
Strapping	4	4					
Seizing	4½	9					
Standing, 2	4½	10					4
Straps, 2	4½	4					
Lanyards, 2	2	6					
Hallyard	3½	38	Long Tackle	24	1	1	1
			Single	12	1		
Strapping	4½	3					
Seizing and Lashing		6					
Slings, 1 Pair	6½	6					
Seizing and Racking	1½	10					
Clew-Lines, 2	2½	42	Strap bound	10	4		
			Single	10	2		
Strapping	3	6					
Buntlines, 2	2	32	Single	8	2		
Strapping	2½	1					
Earings, 4	1½	12					
Sheets cabled single, 2	5	39					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
JIBB.							
Horses, 1	4	19					
Seizings, 2		½	of a Tar'd Line				
Guy Pendants, 1 Pair	4½	32	Single	13	2		
Falls, 2	3	34	Single	11	4		
Strapping	4½	1½					
	3	2					
Lashers, 4	1	14					
Out-Haller	4	11					
Tackle-Fall	2½	29	Single	9	2		
Strapping	2½	1					
Stay	4½	30	Single	14	1		
Strapping	4½	1					
Tacklefall	2½	24	Double	9	1		
			Single	9	1		
Strapping	2½	1					
Hallyard	4	42	Single	13	1		
Strapping	4	1					
Downhaller	2½	38	Single	9	1		
Sheets single, 2	3½	48	Single	11	2		
Pendants, 1 Pair	4½	12	Single	11	2		
SPRITSAIL TOPSAIL.							
Horses, 2	3	9					
Braces, 2	2½	52	Single	9	2		
Strapping	2½	1					
Lifts single, 2	2½	39	Single	9	2		
Strapping	2½	1					
Hallyard	2½	30	Single	9	2		
Strapping	2½	2½					
Lashing	2½	6					
Parrel-Ropes, 2	2½	5	Parrel	12	1		
Clewlines, 2	2	45	Single	7	4		
Strapping	2	2					
Lacing and Earings, 2	1	40					
FORE-MAST.							
Woolding	3½	280					
Girdlines, 2	5	78	Single	16	2		
Strapping	5	2					
Seizing	2½	7					
Lashings, 2	2½	18					

98 and 90 Gun Ship. 2290 and 2164 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 2 Pr.	11	18	Sin. Coaked	24	2		8
Strapping —	7½	4					
Seizing —	1½	8					
Runners of Tackles, 4	7½	34	Double Thin Coak	21	4		
Strapping —	6	6					
Falls of Tackles, 4	4	194	Single Thin Coak	26	4	4	4
				14	4	4	4
Strapping	5½	10					
Seizing —	1	45					
Shrouds cabled fine, 7 Pair	11	200	Dead Eyes	17	18		
Seizings Eye, 6 —	1½	45					
Throat, 14 —	1½	87½					
End, 14 —	1½	87½					
Lanyards fine, 14 —	5½	108					
Ratling — —	1½	340					
Stay cabled fine 4 Strands	17½	1 ½	Heart	24	1		
Seizings, 3 —	2	25					
Lanyard fine —	6	17					
Collar cab. 4 Str. fine doub.	9	8½	Heart	24	1		
Seizings, 2 —	1½	12					
Lashing —	2½	6					
Preventer Stay cabled 4 Str. fine	11	14½	Heart	16	1		
Lanyard fine —	4	9					
Coll. cab. 4 Str. fine double —	6	7	Heart	16	1		
Lashing —	2½	6					
Seizings, 2 —	1½	18					
Catharpin Legs, 4 —	7	14					
Seizings, 8 —	1½	60					
Crowfoot for the Top —	1½	125	Euphro	30	1		2
Tackle —	2	10					
Strapping	2	1½					
Jeers Tye — — —	7½	120	Treb. Coak.	26	2		
Falls, 2 — —			Doub. Coak.	26	2		
Strapping — —	8½	24					
Seizing — —	2	32					
Lashing at the Mast Head —	4½	40					
Yard — —	3½	12					
Stoppers, 2 —	6	6					
Horses, 2 — — —	5½	16					2
Stirrups, 6 — —	4	15					8
Seizings, 4 — —	¼	18					
Lanyard — — —	2	6					
Yard Tackle Pendants, 2	7	9	Do. thin Co.	17	2		
Falls, 2 —	3½	100	Dou. thin Co.	20	2	2	2
			Single	13	2		
Strapping — —	5½	9					
Seizing — —	1	16					
Inner Tric. Lines, 2	2½	40	Single	8	2		
Outer Tric. Lines, 2	2	40	Single	7	4		
Strapping — —	2	6					
Braces, 2 — — —	4½	108	Single Coak.	16	4		
Pendants, 2 — —	5½	10	Single Coak.	16	2		
Preventer, 2 —	4½	11					
Strapping — — —	5	5					
Seizing — — —	¾	18					
Lashing — — —	1½	24					
Preventers *(in War only)* 2	3½	96	Single	13	4		

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
FORE-MAST CONTINUED.							
Braces Preventer Strapping —	3½	3					
Seizing — —	2½	10					
Lifts, 2 — — —	4½	106	Single	16	6		
Span for the Cap —	6½	8					
Short Span — —	4½	2½					
Strapping — —	5	5					
Seizing — —	¾	18					
Jigger Tackle, No. 2	2½	30	Double	10	2		
			Single	10	2		
Strapping —	3½	4					
Truss Pendants, 2 — —	8	16					
Falls, 2 — —	3	56	Double	11	4	4	4
Strapping — —	3½	4					
Eye Seizings, 2 —	1½	14					
Nave Line — —	2	20	Single	7	1		
Puddening the Yard — worn	6½	12					
Clew-garnets, 2 — —	4	68	Sin. Strapbo.	15	4		
			Single	15	2		
Straps ab. the Yard	4	8					
Strapping — —	4	2					
Seizing — —	¾	18					
Lashing — —	1	14					
Buntline Legs, 4 — —	3	46	Double	11	4		
Falls, 2 — — —	3	46	Single	10	8		
Strapping — —	3½	12					
Leechline Legs, 2 — —	2½	48	Double	11	4		
Falls, 2 — — —	2½	48	Single	10	8		
Strapping — —	3½	12					
Slablines, 2 — —	2½	39	Single	9	2		
Strapping — —	2½	1					
Bowlines, 2 — — —	4½	58	Single	16	4		2
Bridles, 2 — —	4½	6					
Strapping — —	4½	4½					
Seizing — —	2½	12					
Lashing — —	2½	12					
Earings, 6 — —	2	28					
Sheets Cabled, 2 — —	7	80	Sin. Coaked	24	2		2
Strapping — —	7	4½					
Seizing — —	1	14					
Stoppers, 2 — —	5	4					
Tacks Taper and Cabled, 2	9	45	Shouldered	26	2		
Strapping — —	6½	6					
Seizing — —	1½	8					
Stoppers, 2 — —	6	5				2	2
Lanyards, 2	2	5					
Gammoning the Bumkin, worn	4½	16				2	6
Lanyards, 2 — —	2	12					
Lany. for Pudden & Dolphin	1½	10					4
Slings, 1 Pair — —	11½	9					1
Strap — —	11½	4					1
Seizings, 2 — —	2	18					
Lanyard — —	3½	7					
Stayfail Hallyard —	4	30	Single	13	2		
Sheets, 2 — —	4	30	Single	13	2		
Tack — —	3	2					
Downhaller —	2½	27	Single	9	1		
Strapping — —	4	4					
	2½	1					

98 and 90 Gun Ship. 2290 and 2164 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Studd. Sail Hallyard, Inner, 2 Pr.	3	44	Single	12	6		
Outer, 2 Pr.	3½	84	Single	12	4		
Sheets, 2 Pr.	3	15					
Tacks, 2 Pr.	3½	66	Single	12	2		
Strapping	3½	16					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair	5½	7					2
Falls, 2	2½	56	Double	10	2	2	2
			Single	10	2	2	2
Strapping	3½	4					
Shrouds fine 4 Pr.	7	107	Dead Eyes	11	12		
Seizings Eye, 4	1	24					
Throat, 8	1	42					
End, 8	¾	36					
Lanyards fine, 8	3½	60					
Ratling	1	146					
Standing Backstays fine 3 Pr.	7	147	Dead Eyes	11	6		
Seizings Eye, 3	1	16					
Throat, 6	1	28					
End, 6	¾	24					
Lanyards fine, 6	3½	30					
Breast Backstay Runners, 2	5	9	Single	14	2		
Falls, 2			Double	10	4		
Strapping	3	3					
Stay Cabled 4 Strands fine	8½	23½					
Collar fine	6½	3½	Single	20	1		
Tackle	3½	24	Long Tackle	22	1		
			Single	14	1		
Strapping	5	3					
Seizing	1½	6					
	¾	6					
Preventer Stay cab. 4 Str. fine	6	23½					
Collar, fine	5	3	Single	16	1		
Tackle	3	20	Long Tackle	18	1		
			Single	12	1		
Strapping	4	3					
Seizing	1	9					
Lashing the Col.	2½	6					
Shifting Backstays, fine, 1 Pair	7	37					2
Tackles 4 No.	3	48	Double	12	4	4	4
			Single	12	4	4	4
Strapping	4	8					
Futtock Shrouds, fine, 4 Pair	7	40	Plates with Dead Eyes	11	12	12	12
Seizing Upper, 8	1	48					
Lower, 8	¾	42					
Ratling	1½	50					
Top Rope Pendants, fine, 2	9	40	S. Brass Shiv.	26	2		2
			Iron Bound				
Falls, 2	4½	138	Treb. Ir. Bo. Coaked	22	4		
Tye	6	42	Flat Side	20	2		
			Doub. Coak.	20	1		
Strapping	6	8					
Seizing	1	12					
Lashers at the Mast Head, 2	2½	15					
Yard	2	5					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2	3	125	Do. thin Co.	26	2		
			Sin. Ditto	26	2	2	2
Strapping	5	8					
Seizing	¾	18					
Horses, 2	4	12					
Stirrups, 6	3	8½					6
Braces, 2	3½	100	Single	14	4		
Pendants, 2	4½	9	Single	14	2		
Preventer, 2	4	10					
Strapping	4	5					
Lifts, 2	3½	68	Double	12	2		
			Single	12	4		
Beckets, 2	4	3					
Strapping	4	8					
Seizing	¾	20					
Parrel Ropes, 2	3½	13	Parrel	23	1		
Racking and Seizing	1	20					
Clewlines, 2	4	88	Sin. Str. bo.	14	4		
			Single	14	2		
Strapping	4	8					
Buntlines, 2	3	68	Single	11	4		
Strapping	3	3					
Leechlines, 2	2½	32	Single	10	2		
Strapping	2½	1					
Bowlines, 2	3½	66	Single	12	2		2
Bridles, 4	3½	14					2
Strapping	3½	2					
Lashing	1	12					
Reefstackle Pendants, 2	4	42	Double	9	4	2	2
Falls, 2	2½	62					
Strapping	3	3					
Earings, 10	1½	40					
Sheets, 2	8	54	Sin. Shoul.	26	2		
			½ do. th & thin	26	2		
Straps for Sheet Blocks, 2	8	5	Coaked				
Quarter Blocks, 2	6	10					
Lashers for Quarter Blocks, 2	2½	10					
Seizings, 2	1	24					
Span worn	3½	10					
Stoppers, 2	6½	5					
Slings, 1 Pair	5	12					
Stayfail Stay	4	23	Single	13	1		
Tackle	2½	15	Double	10	1		
			Single	9	1		
Hallyard	3½	39	Single	12	1		
Strapping	3½	1½					
Sheets, 2	4	33	Single	13	2		
Strapping	4	1½					
Outhaller	2½	20	Single	9	1		
Downhaller	2½	30	Single	9	1		
Strapping	2½	2					
Studdingsail Hallyards, 2 Pair	3½	92	Single	12	6		
Sheets, 2 Pair	3	48	Single	12	2		
Tacks, 2 Pair	3½	72	Single	14	4		
Downhallers, 2	2	62	Single	9	2		
Boom Tackles, 2	2	80	Double	8	2		
			Single	8	4		
Tails and Straps, 2	3½	18					
	2½	6					

98 and 90 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	4	76					12
Lanyards, 6 — — —	2	12					
Standing Backſtays, 2 Pair —	4	88	Dead Eyes	7	4		
Lanyards, 4 — — —	2	20					
Stay cabled 4 Strands — —	4½	29	Single	12	1		
Strapping — — —	3½	1½					
Tackle — — —	2	18	Double	7	1		
			Single	7	1		
Strapping — — —	2½	1½					
Flagſtaff Stay — — —	2	29					1
Hallyards, 1 Pair — —	1½	70					
Tye — — — — —	4	16					
Hallyard — —	2	30	Double	8	1		
			Single	8	2		
Strapping — — —	2½	1½					
Horſes, 2 — — — — —	3	8					
Braces, 2 — — — — —	2	110	Single	8	6		
Pendants, 2 — — —	3	10	Single	8	2		
Strapping — — —	2	4					
Lifts ſingle, 2 — — — —	2½	58	Single	8	2		2
Strapping — — —	2½	1½					
Parrel Ropes, 2 — — —	2	5	Parrel	12	1		
Clewlines, 2 — — —	2	72	Single	7	6		
Strapping — — —	2	4					
Bowlines, 2 — — — —	2	73	Single	7	2		4
Bridles, 2 — — —	2	4½					2
Strapping — — —	2	2					
Earings, 2 — — — —		2	Tarr'd Lines				
Shifting Backſtays, 1 Pair —	4	44					2
Tackles, 2 No. —	2	20	Double	7	2	2	2
			Single	7	2	2	2
Strapping — —	2½	1½					
Studdingſail Hallyards, 2 Pair —	2	78	Single	7	6		
Sheets, 1 Pair — —	2	22					
Tacks, 2 Pair — —	2	48	Single	7	4		
Downhallers, 2 — —	1½	22					1
Strapping — — —	2	8					
MAIN-MAST.							
Woolding — — —	3½	346					
Girdlines, 2 — — —	5	80	Single	16	2		
Strapping — — —	5	2					
Seizing — — —	¾	7					
Laſhings, 2 — — —	2½	18					
Pendants of Tack. cab. fine, 2 Pr.	11	20	Sin. Coak.	24	2		8
Strapping —	7½	4					
Seizing —	1½	8					
Runners of Tackles, 4 — —	7½	36	Do. thin Co.	21	4		
Strapping — —	6	6					
Falls of Tackles, 4 — — —	4	200	Sin. thin Co.	26	4	4	4
Strapping — —	5½	10					
Seizing — —	1	40					
Shrouds cabled, fine, 7 Pair —	11	223	Dead Eyes	17	18		
Seizings Eye, 6 — —	1½	45					
Throat, 14 — —	1½	87½					
End 14 — — —	1½	87½					
Lanyards, fine, 14 — —	5	108					
Ratling — — — —	1½	360					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Stay cabled 4 Strands, fine —	18½	22	Heart	26	1		
Seizings, 4 — — —	2	25					
Lanyard, fine — —	5½	20					
Collar cabled 4 Strands, fine	13½	11	Heart	26	1		
Worming — —	2	60					
Seizings, 3 — —	2	20					
Laſhing — — worn	4	24					
Preventer Stay cab. 4 Strands fine	13	19½	Heart	17	1		
Lanyard, fine —	5	10					
Col. cab. 4 ſtr. fine. do.	6	6	Heart	17	1		
Laſhing — —	2	8					
Seizings, 3 — —	1½	20					
Catharpin Legs, 4 — — —	7	17					
Seizings, 8 — —	1½	60					
Stay Tackle Pendant — —	6	5	Do. thin Co.	18	1		
Fall — — —	3½	46	S. thin Co.	20	1	1	2
				14	1	1	1
Strapping — —	4½	3½					
Seizing — —	¾	12					
Laſhing — —	1½	12					
Fore-Stay Tackle Fall — —	3½	46	Do. thin Co.	18	1		
			S. thin Co.	20	1	1	2
				14	1	1	1
Strapping —	4½	3½					
Seizing —	¾	12					
Crowfoot for the Top — —	1½	140	Euphro	36	1		2
Tackle — — —	2	10					
Strapping — —	2½	1½					
Jeers { Tye — — —	8	130	Treb. Coak.	28	2		
Falls, 2 — — —			Doub. Coak.	28	2		
Strapping — —	9	24					
Seizing — — — —	2	32					
Laſhers to the Maſt Head, 2	4½	45					
Yard — —	3½	12					
Stoppers, 2 — — —	6	6					
Horſes, 2 — — —	5½	17½					2
Stirrups, 6 — — —	4	16					8
Seizings, 4 — — —	¾	18					
Lanyard — — —	2	6					
Yard Tackle Pendants, 2 —	7	10	Do. thin Co.	17	2		
Falls, 2 — —	3½	110	S. thin Co.	20	2	2	2
			Single	13	2		
Strapping — —	5½	9					
Seizing — —	1	16					
Inner Tricing-Lines, 2	2½	40	Single	8	2		
Outer Tricing-Lines, 2	2	40	Single	7	4		
Strapping — —	2	6					
Braces, 2 — — —	4½	104	Sin. Coak.	16	2		
Pendants, 2 — —	5½	10	Sin. Coak.	16	2		
Preventer, 2 — —	4½	11					
Strapping — —	5	4					
Seizing — — —	¾	10					
Preventers *(in War only)* 2	3½	96	Single	13	4		
Strapping — —	3½	3					
Seizing — — —	¾	10					
Lifts, 2 — — — —	4½	118	Single	16	6		
Span for the Cap — —	6	9					
Short Span — —	4½	2½					

98 and 90 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — —	5	5					
Seizing — — —	¾	18					
Jigger Tackles, 2 —	2½	30	Double	10	2		
			Single	10	2		
Strapping — —	3½	4					
Truſs Pendants, 2 — —	8	18					4
Falls, 2 — — —	3	64	Double	11	4	4	4
Strapping — —	3½	4					
Eye Seizings, 2 —	1½	14					
Nave-Line — — —	2	22	Single	7	1		
Puddening the Yard — worn	6½	14					
Clewgarnets, 2 — — —	4	78	Strapbound	15	4		
			Single	15	2		
Strap about the Yard —	4	10					
Strapping — —	4	2					
Seizing — — —	¾	18					
Laſhing — — —	1	4					
Buntline Legs, 4 — —	3	50	Double	11	2		
Falls, 2 — —	3	58	Single	11	10		
Strapping — —	3½	12					
Leechline Legs, 2 — —	2½	52	Double	11	4		
Falls, 2 — — —	2½	48	Single	10	10		
Strapping — —	3½	13					
Slablines, 2 — —	2½	40	Single	9	2		
Strapping — —	2½	1					
Bowlines, 2 — —	4½	58	Double	16	1		4
Bridles, 4 — —	4½	16					2
Strapping — —	4½	4					
Seizing — — —	¾	4					
Laſhing — — —	2	4					
Tackle — — —	3	16	Long Tackle	20	1	1	1
			Single	11	1	1	1
Strapping — —	3½	3					
Earings, 6 — —	2	28					
Sheets, cabled, 2 — —	7	90	Sin. Coak.	24	4		4
Strapping — —	7	10					
Seizing — — —	1½	16					
Laſhers, 2 — — —	2	6					
Stoppers, 2 — — —	6	4					
Tacks Taper and Cabled, 2 —	9½	48					
Stoppers, 2 — — —	6	4				2	2
Lanyards, 2 — —	2	6					
Lany. for the Pudden & Dolphin —	2	10					4
Slings, 1 Pair — — —	11½	10					1
Strap — — — —	11½	4					1
Seizing — — —	2	18					
Lanyard — — —	3½	7					
Quarter Tackle Pendants, 2 —	6	10	Do. thin Co.	18	2		
Falls, 2 — —	3½	84	S. thin Co.	20	2	2	2
			———	14	2	2	2
Strapping — —	5	9					
Seizings, 3 — —	1	14					
Luff Tackles, 4 No. — —	3½	180	Double	13	6	6	6
			Single	13	6	6	6
Strapping — —	4	12					
Seizing — — —	¾	32					
Stayſail Stay — — — worn	5	14					2
Collar — — —	4	2					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayſail Collar Seizing — —	1	6					
Lanyard — —	1½	4					
Hallyard, 1 — — —	3	39	Single	11	3	1	1
Sheets, 2 — — —	4	14	Single	14	2	1	1
Tacks, 2 — — —	4	5					
Downhaller — — —	2½	19	Single	9	1		
Strapping — — —	4	1½					
	3	2					
Studd. ſail Hallyards, Inn. 2 Pr.	3	58	Single	12	6		
Outer, 2 Pr. —	3½	98	Single	12	4		
Sheets, 2 Pair — —	3	34					
Tacks, 2 Pair — —	3½	52	Single	12	2		
Strapping — — —	3½	16					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	5½	7½					2
Falls, 2 — — —	2½	56	Double	11	2	2	2
			Single	11	2	2	2
Strapping — —	3½	4					
Shrouds, fine, 4 Pair — —	7	119	Dead Eyes	11	12		
Seizings Eye, 4 — —	1	24					
Throat, 8 — —	1	42					
End, 8 — —	½	36					
Lanyards, fine, 8 — —	3½	60					
Ratling — — —	1	154					
Standing Backſtays, fine, 3 Pr. —	7	165	Dead Eyes	11	6		
Seizings Eye, 3 —	1	16					
Throat, 6 —	1	28					
End, 6 —	¾	24					
Lanyards, fine, 6	3½	30					
Breaſt Backſtay Runners, 2 —	5	9	Single	14	2		
Falls, 2 — — —	2½	20	Double	10	4		
Strapping — —	3	3					
Stay Cabled 4 Strands, fine —	8½	24					
Collar, fine — — —	7	4	Single	20	1		
Tackle — — —	3½	24	Long Tackle	22	1		
			Single	14	1	1	1
Strapping — — —	4½	4					
Seizing — — —	1½	6					
	¾	6					
Laſhing — — —	2	7					
Preventer Stay, Cabled 4 ſtr. fine	6½	23½					
Collar, fine —	5	3	Single	16	1		
Tackle — —	3	24	Long Tackle	18	1		
			Single	12	1	1	1
Strapping —	4	3					
Seizing — —	1	8					
Laſhing the Col. —	1½	7					
Shifting Backſtays, fine, 1 Pair —	7	42					2
Tackles, 4 No. —	3	48	Double	12	4	4	4
			Single	12	4	4	4
Strapping — —	4	8					
Futtock Shrouds, fine, 4 Pair —	7	44	Pla with D. E	11	12	12	12
Seizings Upper. 8 —	1	48					
Lower, 8 —	½	42					
Ratling — —	1½	55					
Top Rope Pendants, fine, 2	9	44	Sin. I. bound Braſs Shiv.	26	2		2

98 and 90 Gun Ship. 2290 and 2164 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2 — —	4	142	Treb. I. bo.	22	4		
Tye — — — —	6	45	Flat Side	22	2		
			Double	22	1		
Strapping — — —	6	8					
Seizing — — —	1	12					
Lashers at the Mast Head, 2	2½	15					
Yard — —	2	5					
Hallyards, 2 — — —	3½	137	Do. thin Co.	26	2		
			S. thin Co.	26	2	2	2
Strapping — — —	5	8					
Seizing — — —	¾	18					
Horses, 2 — — —	4½	13					
Stirrups, 6 — — —	3	9					6
Braces, 2 — — — —	3½	86	Single	14	2		
Pendants, 2 — — —	4½	9	Single	14	2		
Preventers, 2 — —	4	10					
Span ab. the Mizen Mast —	4½	6					
Strapping — — —	4	3					
Lifts, 2 — — — —	3½	76	Double	12	2		
			Single	12	4		
Beckets, 2 — — —	4	3					
Strapping — — —	4	8					
Seizing — — —	¼	20					
Parrel Ropes, 2 — — —	4	15	Parrel	25	1		
Racking and Seizing —	1	20					
Clew-lines, 2 — — —	4	102	Sin. Str. Bo.	14	4		
			Single	14	2		
Strapping — — —	4	8½					
Bunt-lines, 2 — — — —	3	74	Single	11	6		
Strapping — — —	3	4					
Leech-lines, 2 — — — —	2½	36	Single	10	2		
Strapping — — —	2½	1					
Bowlines, 2 — — — —	4½	69	Single	15	1		2
Bridles, 4 — — —	4½	18					4
Strapping — — —	4½	2½					
Seizing — — —	4½	6					
Frapping and Lashing —	2	12					
Reeftackle Pendants, 2 —	4	50	Double	9	4	2	2
Falls, 2 — — — —	2½	76					
Strapping — — —	3	3					
Earings, 10 — — — —	1½	45					
Sheets, 2 — — — —	8½	58	Sin. Shoul.	26	2		
			¼ Double	26	2		
Straps for Sheet Blocks, 2 —	8½	5	Thick & thin				
Quarter Blocks, 2 —	6	10					
Lashers for Quart. Blocks, 2	2½	10					
Seizings, 2 — — —	1½	24					
Span — — — worn	3½	12					
Stoppers, 2 — — —	6½	5					
Slings, 1 Pair — — —	5	14					
Stayfail Hallyard — —	3½	45	Single	13	1		
Strapping —	4	1					
Sheets, 2 — — — —	3	58	Single	11	2		
Strapping — —	3	2					
Pendant — —	4	4	Single	12	2		
Tack — — — —	3	5					
Downhaller — — —	2	26	Single	9	2		
Strapping — — —	2½	1					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-MAST CONTINUED.							
Stayfail Brails, 2 — — —	2	42	Single	7	2		2
Middle Stayfail Stay — —	4	22	Single	13	1		
			Double	8	1		
Tackle —	2	24	Single	8	1		
Hallyard — —	3½	42	Single	12	1		
Sheets, 2 — —	3½	39		12	2		
Tack — — —	3	5					
Downhaller — —	2½	30	Single	9	2		
Strapping — —	3	6					
	2	2					
Tricing-line —	2½	18	Single	9	1		
Studdingsail Hallyards, 2 Pair	3½	104	Single	12	6		
Sheets, 2 Pair — —	3	50	Single	12	2		
Tacks, 2 Pair — —	3½	72	Single	12	4		
Downhallers, No. 2 — —	2	64	Single	9	2		6
Boom Tackles, 2 No. —	2	84	Double	8	2		
			Single	8	4		
Lash. for Booms — worn	2½	20					
Tailing and Strapping —	3½	18					
	2½	6					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair — — —	4	86					12
Lanyards, 6 — — —	2	12					
Standing Backstays, 2 Pair —	4	98	Dead Eyes	7	4		
Lanyards, 4 — —	2	20					
Stay cabled 4 Strands — —	4½	25	Single	13	1		
Strapping — — —	3½	1					
Flagstaff Stay — — —	2	28					1
Hallyards, 1 Pair — —	1½	76					
Tye — — — —	4	18					
Hallyard — — —	2	34	Double	8	1		
			Single	8	2		
Strapping — — —	2½	1½					
Horses, 2 — — — —	3	10					
Braces, 2 — — — —	2	80	Single	8	2		
Pendants, 2 — — —	3	10	Single	8	2		
Strapping — — —	2	3					
Lifts single, 2 — — —	2½	62	Single	8	2		2
Strapping — — —	2½	1½					
Parrel Ropes, 2 — — —	2	5	Parrel	12	1		
Clewlines, 2 — — —	2	78	Single	7	6		
Strapping — — —	2	4					
Bowlines, 2 — — — —	2	74	Single	7	2		2
Bridles, 4 — — —	2	8					2
Strapping — — —	2	1					
Earings, 4 — — —	2	Tarr'd Lines					
Shifting Backstays, 1 Pair —	4	49					
Tackles, 2 No. —	2	20	Double	7	2	2	2
			Single	7	2	2	2
Strapping — —	2½	1½					
Stayfail Stay — — —	3	37	Single	10	1		
Hallyard — — —	2½	48	Single	9	1		
Sheets, 2 — — —	2½	48	Single	9	2		
Tack — — — —	2	7					
Downhaller — — — —	2	33	Single	7	2		
Strapping — —	2½	1½					
	2	1					

98 and 90 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	2	82	Single	7	6		
Sheets, 2 Pair	2	46					
Tacks, 2 Pair	2	52	Single	7	4		
Downhallers, 2	1½	46					
Strapping	2	8					
MIZEN-MAST.							
Woolding	2½	162					
Girdlines, 2	3½	66	Single	12	1		
Strapping	3½	1½					
Seizing	¾	6					
Laſhings, 2	1¾	8					
Burton Pendants, 1 Pair	5	8					2
Falls, 2	3	76	Double	11	2	2	2
			Single	11	2	2	2
Strapping	3½	4					
Shrouds, fine, 5 Pair	7	105	Dead Eyes	11	12		
Seizings Eye, 5	1	24					
Throat, 10	1	22					
End, 10	¼	36					
Lanyards, fine, 10	3½	72					
Ratling	1	182					
Stay Cabled 4 Strands, fine	8½	14½					2
Seizings, 3	1	8					
Lanyard, fine	3½	6					
Collar, fine	7	3½					1
Seizing	1	3					
Laſhing	1½	3					
Crowfoot for the Top	1	76	Euphro	24	1		2
Tackle	1½	5					
Strapping	2	1					
Jeers, 1 Pair	5½	50	Treble Co.	22	1		
			Double Co.	22	1		
Strapping	6	8					
Seizing	1½	10					
Laſhing at the Maſt Head	3	12					
Yard	2½	6					
Derrick	4½	38	Double	15	1		
Span	4½	4	Single	15	1		1
Strapping	4½	2½					
Seizing	1	12					
Laſhing	2	8					
Vang Pendants, 2	4½	13	Double	9	2		
Falls, 2	2½	42	Single	9	2	2	2
Strapping	3	1					
Bowlines, 2	3	24	Single	10	4		2
Strapping	3	3					
Truſs Pendant	5	6					2
Fall	2½	20	Long Tack.	18	1	1	1
			Single	9	1	1	1
Strapping	3	3					
Seizing	¾	8					
Brails Peek Legs, 2 Pr.	2	12					
Falls	2	18	Single	7	6		
Middle	2½	24	Single	8	2		
Throat	3	26	Single	10	2		
Middle	2½	24	Single	9	2		
Foot	2½	21	Single	9	2		2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping	3	1					
	2	9					
Lacing Mizen to Yard	1	30					
Maſt worn	3	20					
Earings, 2	2	10					
Peek Hallyards, 1 Pair	2	24	Single	7	1		1
Sheet	4½	32	Double	15	1		1
			Single	15	1		
Strapping	4½	3½					
Seizing	1	7					
Tack	3	5					
Slings, 1 Pair	6	6					
Stayſail Stay worn	5	16					2
Collar	4½	3½					1
Seizing	2½	3					
Laſhing	1	3					
Lanyard	2	6					
Hallyard	3	33	Single	11	3		
Sheets, 2	3½	15	Single	11	2		1
Tack	2½	4					
Downhaller	2	15	Single	7	2		
Strapping	3½	3					
	2	2					
Brails, 2	2	30	Single	7	2		2
Driver Hallyards, 2 Pair	3½	42	Single	12	4	1	2
Sheets, 2	3½	20	Single	12	2		
Tacks, 2	3½	29	Single	12	2		
Downhaller	2½	24	Single	9	1		
Strapping	3½	7					
Laſhing	2½	14					
CROSS-JACK-YARD.							
Span about the Cap	4	2					
Braces, 2	2½	62	Single	9	2		
Pendants, 2	3½	6	Single	9	2		
Preventer, 2	3	7					
Strapping	2½	2					
Lifts Running, 2	2½	54	Single	9	4		
Strapping	2½	3					
Slings, 1 Pair	5	6	Sin.do.Scord	15	1		
Strapping	4	2					
Seizing	1	3½					
Laſhing	1½	5					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	4½	56	Dead Eyes	8	8		
Seizings, 6		3	Tarr'd Lines				
Lanyards, fine, 2	2½	32					
Ratling	1	70					
Standing Backſtays, fine, 1 Pair	4½	59	Dead Eyes	8	4		
Seizings, 4		1	Tarr'd Line				
Lanyards, fine, 2	2½	16					
Stay cabled, 4 Strands, fine	5	14					
Lanyard, fine	2	6					2
Collar	4	3	Single	14	1		
Seizing and Laſhing	1	6					
Flag-ſtaff Stay	2	13½					1
Hallyards, 1 Pair	1½	44					
Shifting Backſtays, fine, 1 No.	4½	14½					1

98 and 90 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backſtay Tackle	2½	12	Double	9	1	1	1
			Single	9	1	1	1
Strapping	3	4					
Futtock Shrouds, fine, 3 Pr.	4½	17	Plates with Dead Eyes	8	8	8	8
Seizings, 6		2	Tar'd-Lines				
Ratling	1	20					
Top Rope Pendants, fine, 2	5½	18	Single I. bo.	16	1	1	1
Falls, 2	3	44	Double D°	12	2		
Tye	4	17	Sin. do. Scord	13	1		
Hallyard	2½	48	Double thin	12	1		
			Single thin	12	1	1	1
Strapping	3½	4					
Laſhing	1	3					
Horſes, 2	3	10					4
Stirrups, 4	2½	4					
Braces, 2	2½	50	Single	9	2		
Pendants, 2	3	4½	Single	9	2		
Strapping	2½	1½					
Liſts, 2	2½	53	Double	9	2		
			Single	9	2		
Strapping	3	3					
Parrel Ropes, 2	2½	6	Parrel	16	1		
Clew-lines, 2	2½	64	Strap bound	9	4		
			Single	9	2		
Strapping	2½	4					
Buntline	2	48	Single	8	4		
Strapping	2	1					
Leechlines, 2	2	18	Single	7	2		
Strapping	2	1					
Bow-lines, 2	2½	42	Single	9	2		2
Bridles, 4	2½	8					2
Strapping	2½	1					
Reef Tackle Pendants, 2	3	35					
Falls, 2	1½	40	Double	7	2		
			Single	7	2		
Strapping	2	1					
Earings, 8	1½	30					
Sheets, 2	5	38	Sin. Should.	15	2		
			Single	15	1		
Strapping	5	2					
	4	3					
Seizing	¾	14					
Laſhing	1¼	5					
Stayſail Hallyard	2½	28	Single	9	1		
Sheets, 2	2½	30	Single	9	2		
Tacks, 2	2	2					
Downhaller	1½	20	Single	6	1		
Strapping	2½	2					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	2½	39					8
Lanyards, 4	1½	12					
Backſtays, 1 Pair	2½	36					4
Lanyards, 2	1½	6					
Stay	3	14					1
Lanyard	1½	3½					
Tye	3	7					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1½	30	Single	5	2		
Horſes, 2	2	6					2
Braces, 2	1½	42	Single	5	2		
Liſts, ſingle, 2	2	32					
Parrel Ropes, 2	1½	4	Parrel	7	1		2
Clew-lines, 2	1½	48	Single	5	2		
Bow-lines, 2	1½	46					
Bridles, 4	1½	3					4
Earings, 2		1½	Tarr'd-Line				
Strapping	2	3					
NECESSARY ROPES.							
Viol Cabled	13½	46	Single Coak.	56	1		
Strapping	11½	10					
Seizing	2	12					
Laſhing	4½	10					
Winding Tackle Pendant	12	13	Co. Fourfold	22	1		
Fall	4½	80	Treble	22	1		
			Single	22	1		
Strapping	7	18					
Seizing	1½	20					
Catt Falls, 2	5½	124	Treble I. bo. Braſs Shiv.	25	2		
Lanyards, 2	3	30	Sin. 2 large ragged Stap.	10	2		4
Stoppers 2 No.	5	6					
Guy's Maſt-Head, 2	9	32					
Fore, 2	9	22					
After, 2	6	26					
Fiſh Tackle Pendant	9½	15	Single Coaked	28	1	1	1
Fall	4½	52	Long Tack.	38	2		
Strapping	7	6					
	6½	5					
Seizing	1½	10					
	1	10					
Lanyard	3	16					
Anchor Stock Tacklefall	3	30	Double	12	1	1	1
			Single	12	1	1	1
Bill Pendant	5½	12				1	2
Strapping	4	2					
Seizing	¾	9					
Stoppers Sheet Anchor, 2	9	10					
Beſt Bower, 2	9	10					
Small Bower, 2	9	10					
Spare, 2	9	10					
Seizings	1	36					
Wing cabled, 2 No.	9	20					
Dog, 2 No.	8	20					
Seizing	1	36					
Stream Anchor, 2	5	7					
Kedge, 2	4	6					
Deck & Bit, cabled, 10 No.	11½	36					14
Lanyards, 10 No.	3½	50					
Seizing	2	49					
	1	49					

98 and 90 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	9½	18					
Ditto — — — —	9	18					
Ditto — — —	8	20					
Ditto — — —	7½	8					
Ditto — — —	7	8					
Ditto — — —	6½	12					
Ditto — — —	5½	12					
Ditto — — —	5	12					
Ditto — — —	4½	6					
Shank painters Sh. Anchor cab. 2	8½	11½					
Beſt Bower, 2 —	8½	8					1
Small Bower, 2 —	8½	8					1
Spare, Cabled, 2 —	8½	11½					
Seizing —	1	18					
Ropes Buoy Sheet Anchor cabled	8	24					
Beſt Bower Cabled —	8	24					
Small Bower Cabled —	8	24					
Seizing —	1	18					
Stream Anch. Cabled —	5	30					
Kedge Cabled — —	4	30					
Davit, 2 — — —worn	3½	12					1
Bell — — — —	3½	4					
Buckets — — —		1	Coil Laſhing				
Swab, 2 No. — worn	3½	36	Single	12	2		
Entering, 6 No. — —	3½	30					
Paſſing — — —	5	60					2
Lanyard — —	2½	12					
Slip — — — —	3½	40					
Quarters, Poop and Stantion in the Waſte, — —	3½	150					16
Fore, Main & Mizen Tops		1	Coil Laſhing				
Wheel or Tiller White —	4½	30	Single	14	2		2
Strapping — —	4½	1½					
Seizing — —	1	6					
Puddening of Anchors, worn	4	130	Old Canvas.	yd			
	3	40		20			
Seizings, 4	1½	96					
Slings Buoy, 4 Pair — —	4	56					
Lanyards, 3 — worn	3	15					
Seizings, 6 —	1	42					
Gun — — —	8	7					
Nut — — —	7	4					
But, 4 Pair — —	5	20					4
Hogſhead, 4 Pair — —	4	16					4
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys — worn	4	6					
Swabs — worn	3½	24					
Cable Bends, 6 No. — —	3	64					
Rudder Pendants, cabled, 2 —	7½	11					4
Lanyards, 2 —	3	10					
Falls, 2 — — —	3½	50	Long Tackle	28	2	2	2
			Single	15	2	2	2
Strapping — —	4½	5					
Seizing — — —	¼	12					
Stern Ladders, 4 Strands, 2 worn	6	34					
Middle Rope, 2 worn	2	24					
Laſhing — worn	2	12					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 — —	8	7					
	5	2					
Swifters for Capſton-Bars —	2	60					
Laſhing-Cables between Decks							
Sheep-Pens, Steep-Tubs,		5	Coils Laſhing				
Tubs in the Tops, & Booms							
Nettings for the Quart. Waſte,							
Tops, and Barricadoes —	1½	950					
Hallyard for Top Lanthorn —	1	30	Single	5	1		
Enſigns — —	2	36					
Jacks — —	1	12					
For Colours: Head Line —		4	White-lines				
For Colours: Rope Bands —		6 lb	Marlines				
For Colours: Pendant Slings —	¾	30					
Awnings Ridge and Side Rope	3½	130	Single	12	3		
Stops — —	1	40					
Crowfeet — —	1	160	Euphro	34	1		
				24	1		
				22	1		
Hallyard — —	1½	40					
Ridge Tackle Fall —	2½	10	Double	9	1		
			Single	9	1		
For different Uſes of the Ship			Snatch Iron	24	4	4	
			Bo. Hooks	16	4	4	4
			Coaked	14	4	4	4
Strapping — —	4½	8					
Seizing — —	¼	30					
LONGBOAT.							
Burton Pendents, 1 Pair — —	4	3½	Single	11	2		2
Runner — — —	3	12					
Falls, 2 — —	2½	20	Double	9	2	2	2
			Single	9	2	2	2
Strapping — —	3	3					
Shrouds, 2 Pair — —	4	22	Dead Eyes	5	4		
Lanyards, 4 — —	1½	8					
Stay — — — —	4½	7	Dead Eyes	5	1		
Lanyard — —	1½	2½					
Tye — — — —	3	7	Single	9	1		
Main Hallyard — —	2	18	Single	7	2		
Outer Hallyard — —	2	20	Doub. I. bo.	7	1		
			Single	7	1		1
Sheet — — — —	2	15	Double	8	1		
			Single	8	1		1
Wood Hoops, 12 No.							
Downhaller — —	1½	15	Single	5	1		
Strapping — —	2	8					
Topping Lift — —	2½	15					
Fore Hallyard — —	2	16	Single	7	1		
Sheet — — —	2	5					2
Tack — — —	1	1					
Bowline — —	2½	1½					1
Jib Hallyards — —	2	22	Single	7	2	1	1
Sheet — — —	2½	10					2
Outhaller — —	3	10	Iron Trave		1		
Innhaller — —	1	7					
Boat-Rope, cabled —	9	4					
Lanyard — —	2½	4					

98 and 90 Gun Ship. 2290 and 2164 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	5	40					
Grapnel-Rope, cabled — —	4½	50					
Painter — — — —	4	7					
Sternfaſt — — worn	3½	12					
Fenders, cabled, 6 — worn	6	14					
Lanyards, 6 — —	2	12					
Rudder Lanyards, 2 — —	2	2½					
PINNACE.							
Hallyards Main and Fore, 2 —	1¾	20					
Sheets, 4 — — —	1	20					
Grapnel-Rope, cabled — —	3	70					
Painter — — —	3	10					4
Sternfaſt — — worn	2½	10					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5½	10				8	12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					
YAWL OR CUTTER.							
Hallyards *(if Cutters)* 2 Pair —	2	12	Iron Trave		2		
Sheets, 4 — — —	2	8					
	1¼	8					
Grapnel-Rope, cabled —	3	80					4
Painter — — —	3	10					
Slings, 2 Pair — —	5½	10				8	12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 11, Article 2, by Gammonings, 2 —| 8 | 160 | is meant, Two Gammonings are neceſſary, made of Rope 8 Inches in Circumference, containing in the Whole 160 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
SHIPS OF 80 GUNS,
Being respectively of 1615 Tons Burthen.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	3½	180					
Gammonings, 2	8	155					
Shrouds fine, 1 Pair	7½	36	Hearts	13	4	4	4
Collars fine, 2	6	12	Hearts	13	4		
Seizings, 2	1	16					
Lashings, 2	2	12					
Lanyards fine, 2	3½	20					
Bobstays cabled fine 2 Pair	8	36	Hearts	13	3		
Collars fine 2	8	9	Hearts	13	3		
Seizings, 2	1½	30					
Lashings, 2	2	9					
Lanyards fine, 2	4	18					
Horses, 2	4½	18					6
Straps, 2	3½	3½					4
Lanyards, 2	2	8					
SPRITSAIL.							
Horses, 2	3½	12					
Stirrups, 6	3	6					6
Braces, 2	3½	72	Double	12	4		
Pendants, 2	4	5	Single	12	4		
Strapping	3½	10					
Lifts, 2	3½	55	Single	12	4		
Beckets, 2	3½	3½					
Strapping	4	4					
Seizing	¾	9					
Standing, 2	4	9					4
Straps, 2	4	4					
Lanyards, 2	2	6					
Hallyard	3½	36	Long Tackle	24	1	1	1
			Single	12	1		
Strapping	4½	3					
Seizing and Lashing	¾	6					
Slings, 1 Pair	6	6					
Seizing and Racking	1½	10					
Clew-Lines, 2	2½	38	Strap bound	10	4		
			Single	10	2		
Strapping	3	6					
Buntlines, 2	2	30	Single	8	2		
Strapping	2½	1					
Earings, 4	1½	12					
Sheets cabled fingle, 2	4½	36					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
JIBB.							
Horses, 1	3½	18					
Seizings, 2		¼	of a Tar'd Line				
Guy Pendants, 1 Pair	4	30	Single	13	2		
Falls, 2	3	32	Single	11	4		
Strapping	4	1½					
	3	2					
Lashers, 4	1	14					
Out-Haller	3½	10					
Tackle-Fall	2½	24	Single	9	2		
Strapping	2½	1					
Stay	4	28	Single	13	1		
Strapping	4	1					
Tacklefall	2½	23	Double	9	1		
			Single	9	1		
Strapping	2½	1					
Hallyard	3½	41	Single	13	1		
Strapping	3½	1					
Downhaller	2½	36	Single	9	1		
Sheets fingle, 2	3½	46	Single	11	2		
Pendants, 1 Pair	4	12	Single	11	2		
SPRITSAIL TOPSAIL.							
Horses, 2	3	9					
Braces, 2	2½	50	Single	9	2		
Strapping	2½	1					
Lifts fingle, 2	2½	36	Single	9	2		
Strapping	2½	1					
Hallyard	2½	28	Single	9	2		
Strapping	2½	2½					
Lashing	2½	6					
Parrel-Ropes, 2	2½	5	Parrel	12	1		
Clewlines, 2	2	44	Single	7	4		
Strapping	2	2					
Lacing and Earings, 2	1	36					
FORE-MAST.							
Woolding	3½	270					
Girdlines, 2	4½	76	Single	15	2		
Strapping	4½	2					
Seizing	2½	7					
Lashings, 2	2½	18					

80 Gun Ship. 1615 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 2 Pr.	10½	17	Sin. Coaked	22	2		8
Strapping —	7	4					
Seizing —	1½	8	Double				
Runners of Tackles, 4 —	7	32	Thin Coak	21	4		
Strapping —	5½	6					
Falls of Tackles, 4 —	4	190	Single	24	4	4	4
			Thin Coak	14	4	2	2
Strapping —	5½	10					
Seizing —	1	45					
Shrouds cabled fine, 7 Pair —	10½	181	Dead Eyes	16	18		
Seizings Eye, 6 —	1½	45					
Throat, 14 —	1½	87½					
End, 14 —	1½	87½					
Lanyards fine, 14 —	5	108					
Ratling —	1½	330					
Stay cabled fine 4 Strands —	16½	14	Heart	23	1		
Seizings, 3 —	2	25					
Lanyard fine —	3½	16					
Collar cab. 4 Str. fine doub.	8½	8½	Heart	23	1		
Seizings, 2 —	1	12					
Lashing —	2	6					
Preventer Stay cabled 4 Str. fine	10½	14	Heart	15	1		
Lanyard fine —	4	9					
Coll. cab. 4 Str. fine double —	6	7	Heart	15	1		
Lashing —	2½	6					
Seizings, 2 —	1½	18					
Catharpin Legs, 4 —	6½	14					
Seizings, 8 —	1½	60					
Crowfoot for the Top —	1½	120	Euphro	30	1		
Tackle —	2	10					
Strapping	2	1½					
Jeers Tye — — —	7	114	Treb. Coak.	26	2		
Falls, 2 — —			Doub. Coak.	26	2		
Strapping — —	8	24					
Seizing — —	2	32					
Lashing at the Mast Head —	4½	38					
Yard —	3	12					
Stoppers, 2 —	5½	6					
Horses, 2 — — —	5	15					2
Stirrups, 6 — —	4	15					8
Seizings, 4 — —	¾	18					
Lanyard 1 — —	2	6					
Yard Tackle Pendants, 2 —	7	9	Do. thin Co.	17	2		
Falls, 2 —	3½	98	Dou. thin Co.	19	2	2	2
			Single	13	2		
Strapping — —	5½	9					
Seizing — —	1	16					
Inner Tric. Lines, 2	2½	36	Single	8	2		
Outer Tric. Lines, 2	2	36	Single	7	4		
Strapping — —	2	6					
Braces, 2 — —	4	104	Single Coak.	15	4		
Pendants, 2 — —	5	10	Single Coak.	15	2		
Preventer, 2 — —	4	11					
Strapping — —	5	5					
Seizing — —	¾	16					
Lashing — —	1½	24					
Preventers *(in War only)*	3½	92	Single	13	4		

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
FORE-MAST CONTINUED.							
Braces Preventer Strapping —	3½	3					
Seizing —	¾	10					
Lifts, 2 — — — —	4½	104	Single	16	6		
Span for the Cap — —	6	8					
Short Span — — —	4	2½					
Strapping — — —	5	5					
Seizing — — —	¾	18					
Jigger Tackle, No. 2 —	2½	30	Double	10	2		
			Single	10	2		
Strapping —	3½	4					
Truss Pendants, 2 — — —	7½	15					
Falls, 2 — — —	3	52	Double	11	4	4	4
Strapping — —	3½	4					
Eye Seizings, 2 —	1½	14					
Nave Line — —	2	19	Single	7	1		
Puddening the Yard — worn	6	12					
Clew-garnets, 2 — — —	4	66	Sin. Strapbo.	15	4		
			Single	15	2		
Straps ab. the Yard	4	8					
Strapping — —	4	2					
Seizing — —	¾	18					
Lashing — —	1	14					
Buntline Legs, 4 — — —	3	45	Double	11	4		
Falls, 2 — — — —	3	45	Single	10	8		
Strapping — — —	3½	12					
Leechline Legs, 2 — — —	2½	46	Double	11	4		
Falls, 2 — — — —	2½	46	Single	10	8		
Strapping — — —	3½	12					
Slablines, 2 — — —	2	36	Single	8	2		
Strapping — — —	2	1					
Bowlines, 2 — — — —	4½	58	Single	6	4		2
Bridles, 2 — — —	4½	6					
Strapping — — —	4½	4½					
Seizing — — —	¾	12					
Lashing — — —	2½	12					
Earings, 6 — — — —	2	28					
Sheets Cabled, 2 — — —	6	78	Sin. Coaked	22	2		2
Strapping — — —	6	4½					
Seizing — — —	1	14					
Stoppers, 2 — — —	5	4					
Tacks Taper and Cabled, 2 —	8	42	Shouldered	24	2		
Strapping — —	6	6					
Seizing — — —	1½	8					
Stoppers, 2 — — —	6	5				2	2
Lanyards, 2 —	2	5					
Gammoning the Bumkin, worn —	4½	15				2	6
Lanyards, 2 — — —	2	12					
Lany. for Pudden & Dolphin —	1½	10					4
Slings, 1 Pair — — —	11	9					1
Strap — — —	11½	4					1
Seizings, 2 — — —	2	18					
Lanyard — — —	3½	7					
Stayſail Hallyard — —	3½	30	Single	12	2		
Sheets, 2 — — —	4	29	Single	13	2		
Tack — — —	3	2					
Downhaller — —	2½	26	Single	9	1		
Strapping — —	4	4					
	2½	1					

80 Gun Ship. 1615 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Studd. Sail Hallyard, Inner, 2 Pr.	3	42	Single	12	6		
Outer, 2 Pr. —	3½	82	Single	12	4		
Sheets, 2 Pr. — — —	3	15					
Tacks, 2 Pr. — — —	3½	64	Single	12	2		
Strapping — — —	3½	16					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair —	5	6½					2
Falls, 2 — — —	2½	54	Double	10	2	2	2
			Single	10	2	2	2
Strapping — — —	3½	4					
Shrouds fine 4 Pr. — —	6½	104	Dead Eyes	10	12		
Seizings Eye, 4 — —	1	24					
Throat, 8 — —	1	42					
End, 8 — — —	½	36					
Lanyards fine, 8 — —	3½	60					
Ratling — — — —	1	140					
Standing Backstays fine 3 Pr. —	6½	142	Dead Eyes	10	6		
Seizings Eye, 3 —	1	16					
Throat, 6 —	1	28					
End, 6 —	¼	24					
Lanyards fine, 6	3½	30					
Breast Backstay Runners, 2 —	4½	8	Single	14	2		
Falls, 2 — —	2½	20	Double	10	4		
Strapping — —	3	3					
Stay Cabled 4 Strands fine —	8	23					
Collar fine — —	6	3½	Single	20	1		
Tackle — — —	3½	23	Long Tackle	22	1		
			Single	14	1		
Strapping — —	5	3					
Seizing — — —	1½	6					
	¾	6					
Preventer Stay cab. 4 Str. fine —	6	23					
Collar, fine — —	5	3	Single	16	1		
Tackle — —	3	20	Long Tackle	18	1		
			Single	12	1		
Strapping — — —	4	3					
Seizing — — —	1	8					
Lashing the Col.	2½	6					
Shifting Backstays, fine, 1 Pair —	6½	35					2
Tackles 4 No. — —	3	48	Double	12	4	4	4
			Single	12	4	4	4
Strapping — — —	4	8					
Futtock Shrouds, fine, 4 Pair —	6½	39	Plates with Dead Eyes	10	12	12	12
Seizing Upper, 8 —	1	46					
Lower, 8 —	¾	40					
Ratling — —	1½	48					
Top Rope Pendants, fine, 2 —	8½	38	S. Brass Shiv. Iron Bound	24	2		2
Falls, 2 — — —	4½	130	Treb. Ir. Bo. Coaked	22	4		
Tye — — — —	5½	41	Flat Side	18	2		
			Doub. Coak.	18	1		
Strapping — — —	5½	8					
Seizing — — — —	1	12					
Lashers at the Mast Head, 2	2½	15					
Yard — — —	2	5					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2 — — —	3½	120	Do. thin Co.	26	2		
			Sin. Ditto	26	2	2	2
Strapping — — —	5	8					
Seizing — — — —	¼	18					
Horses, 2 — — —	4	12					
Stirrups, 6 — —	3	8½					6
Braces, 2 — — —	3½	96	Single	14	4		
Pendants, 2 — —	4½	9	Single	14	2		
Preventer, 2 —	4	10					
Strapping — —	4	5					
Lifts, 2 — — — —	3½	66	Double	12	2		
			Single	12	4		
Beckets, 2 — —	3½	3					
Strapping — —	4	8					
Seizing — —	¼	20					
Parrel Ropes, 2 — —	3½	12	Parrel	23	1		
Racking and Seizing —	1	20					
Clewlines, 2 — — — —	3	86	Sin. Str. bo.	13	4		
			Single	13	2		
Strapping — —	3½	8					
Buntlines, 2 — — —	3	66	Single	11	4		
Strapping — —	3	3					
Leechlines, 2 — — —	2½	30	Single	10	2		
Strapping — —	2½	1					
Bowlines, 2 — —	3½	64	Single	12	2		2
Bridles, 4 — — —	3½	12					2
Strapping — —	3½	2					
Lashing — —	1	12					
Reeftackle Pendants, 2 —	3½	40	Double	8	4	2	2
Falls, 2 — — —	2	58					
Strapping — —	2½	2½					
Earings, 10 — — —	1½	40					
Sheets, 2 — — — —	7½	52	Sin. Shoul.	24	2		
			½ do. th & thin Coaked	24	2		
Straps for Sheet Blocks, 2	7½	5					
Quarter Blocks, 2 —	6	9					
Lashers for Quarter Blocks, 2	2½	10					
Seizings, 2 — — —	1½	24					
Span — — — worn	3½	9					
Stoppers, 2 — —	6	5					
Slings, 1 Pair — —	5	11					
Stayfail Stay — —	4	22	Single	13	1		
Tackle — —	2½	15	Double	10	1		
			Single	9	1		
Hallyard — —	3½	37	Single	12	1		
Strapping — —	3½	1½					
Sheets, 2 — —	4	32	Single	13	2		
Strapping — —	4	1½					
Outhaller — —	2½	19	Single	9	1		
Downhaller — —	2	29	Single	8	1		
Strapping — —	2	2					
Studdingsail Hallyards, 2 Pair —	3½	88	Single	12	6		
Sheets, 2 Pair —	3	46	Single	12	2		
Tacks, 2 Pair —	3½	70	Single	12	4		
Downhallers, 2 —	2	60	Single	8	2		
Boom Tackles, 2 —	2	80	Double	8	2		
			Single	8	4		
Tails and Straps, 2 —	2½	6					
	3½	18					

80 Gun Ship. 1615 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron: Hooks.	Thimbles
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	3½	73					12
Lanyards, 6 — — —	1½	12					
Standing Backſtays, 2 Pair —	3½	84	Dead Eyes	6	4		
Lanyards, 4 — — —	1½	20					
Stay cabled 4 Strands — —	4	28	Single	12	1		
Strapping — — —	3	1½					
Tackle — — —	2	18	Double	7	1		
			Single	7	1		
Strapping — — —	2½	1½					
Flagſtaff Stay — — —	2	28					1
Hallyards, 1 Pair — —	1½	68					
Tye — — — — —	3½	15					
Hallyard — —	2	29	Double	8	1		
			Single	8	2		
Strapping — — —	2½	1½					
Horſes, 2 — — — —	3	8					
Braces, 2 — — — — —	2	104	Single	8	6		
Pendants, 2 — — —	2½	10	Single	8	2		
Strapping — — —	2	4					
Lifts ſingle, 2 — — —	2½	56	Single	8	2		2
Strapping — — —	2½	1½					
Parrel Ropes, 2 — — —	2	5	Parrel	12	1		
Clewlines, 2 — — —	2	68	Single	7	6		
Strapping — — —	2	4					
Bowlines, 2 — — —	2	70	Single	7	2		4
Bridles, 2 — — —	2	4½					2
Strapping — — —	2	2					
Earings, 2 No. — — — —		2	Tarr'd Lines				
Shifting Backſtays, 1 Pair —	3½	42					2
Tackles, 2 No. —	2	20	Double	7	2	2	2
			Single	7	2	2	2
Strapping — — —	2½	1½					
Studdingſail Hallyards, 2 Pair —	2	76	Single	7	6		
Sheets, 1 Pair — —	2	20					
Tacks, 2 Pair — —	2	48	Single	7	4		
Downhallers, 2 No. — —	1½	20					1
Strapping — — —	2	8					
MAIN-MAST.							
Woolding — — —	3½	330					
Girdlines, 2 — — —	4½	78	Single	14	2		
Strapping — — —	4½	2					
Seizing — — —	¾	7					
Laſhings, 2 — — —	2½	18					
Pendants of Tack. cab. fine, 2 Pr.	10½	19	Sin. Coak.	22	2		8
Strapping —	7	4					
Seizing — —	1½	8					
Runners of Tackles, 4 — —	7	36	Do. thin Co.	21	4		
Strapping — —	6	6					
Falls of Tackles, 4 — — —	4	196	Sin. thin Co.	24	4	4	4
Strapping — —	5½	10					
Seizing —	1	40					
Shrouds cabled, fine, 7 Pair —	10½	198	Dead Eyes	16	18		
Seizings Eye, 6 — —	1½	45					
Throat, 14 — —	1½	87½					
End 14 — — —	1½	87½					
Lanyards, fine, 14 — —	5	108					
Ratling — — — —	1½	350					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Thimbles
MAIN-MAST CONTINUED.							
Stay cabled 4 Strands, fine —	18	21	Heart	24	1		
Seizings, 4 — — —	2	25					
Lanyard, fine — —	5½	20					
Collar cabled 4 Strands, fine	13	11	Heart	24	1		
Worming — —	2	54					
Seizings, 3 — —	2	20					
Laſhing — — worn	4	20					
Preventer Stay cab. 4 Strands fine	12	18½	Heart	16	1		
Lanyard, fine —	4½	10					
Col. cab. 4 ſtr. fine. do.	6	6	Heart	16	1		
Laſhing — —	2	8					
Seizings, 3 — —	1½	20					
Catharpin Legs, 4 — —	6½	16					
Seizings, 8 — —	1½	60					
Stay Tackle Pendant — —	6	5	Do. thin Co.	17	1		
Fall — — —	3½	45	S. thin Co.	19	1	1	2
				14	1	1	1
Strapping — —	4½	3½					
Seizing — —	¾	12					
Laſhing — —	1½	12					
			Do. thin Co.	17	1		
Fore-Stay Tackle Fall — —	3½	45	S. thin Co.	19	1	1	2
				14	1	1	1
Strapping —	4½	3½					
Seizing —	¾	12					
Crowfoot for the Top — —	1½	135	Euphro	30	1		2
Tackle — — —	2	10					
Strapping — —	2½	1½					
Jeers Tye — — —	7½	126	Treb. Coak.	26	2		
Falls, 2 — — —			Doub. Coak.	26	2		
Strapping — — —	8½	24					
Seizing — — — —	2	32					
Laſhers to the Maſt Head, 2	4½	42					
Yard — —	3	12					
Stoppers, 2 — — —	6	6					
Horſes, 2 — — —	5	17					2
Stirrups, 6 — — —	4	16					8
Seizings, 4 — — —	¾	18					
Lanyard — — —	2	6					
Yard Tackle Pendants, 2 —	7	10	Do. thin Co.	17	2		
Falls, 2 — —	3½	102	S. thin Co.	19	2	2	2
			Single	13	2		
Strapping — —	5½	9					
Seizing — —	1	16					
Inner Tricing-Lines, 2	2½	38	Single	8	2		
Outer Tricing-Lines, 2	2	38	Single	7	4		
Strapping — —	2	6					
Braces, 2 — — —	4	98	Sin. Coak.	15	2		
Pendants, 2 — —	5½	10	Sin. Coak.	15	2		
Preventer, 2 — —	4	11					
Strapping — —	4½	4					
Seizing — —	¾	10					
Preventers *(in War only)* 2	3½	90	Single	13	4		
Strapping — —	3½	3					
Seizing — —	¾	10					
Lifts, 2 — — — —	4½	116	Single	16	6		
Span for the Cap — —	6	9					
Short Span — —	4½	2½					

80 Gun Ship. 1615 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Liſts Strapping — —	5	5					
Seizing — — —	¾	18					
Jigger Tackles, 2 —	2½	30	Double	10	2		
			Single	10	2		
Strapping — —	3½	4					
Truſs Pendants, 2 — —	7½	16					4
Falls, 2 — — —	3	60	Double	11	4	4	4
Strapping — —	3½	4					
Eye Seizings, 2 —	1½	14					
Nave-Line — — —	2	20	Single	7	1		
Puddening the Yard — worn	6	12					
Clewgarnets, 2 — — —	4	74	Strapbound	15	4		
			Single	15	2		
Strap about the Yard —	4	8					
Strapping — —	4	2					
Seizing — — —	¾	18					
Laſhing — — —	1	14					
Buntline Legs, 4 — —	3	48	Double	11	2		
Falls, 2 — —	3	56	Single	11	10		
Strapping — —	3½	12					
Leechline Legs, 2 — —	2½	50	Double	11	4		
Falls, 2 — — —	2½	46	Single	10	10		
Strapping — —	3½	13					
Slablines, 2 — — —	2	38	Single	8	2		
Strapping — —	2	1					
Bowlines, 2 — — —	4½	56	Double	16	1		4
Bridles, 4 — —	4½	15					2
Strapping — —	4½	4					
Seizing — — —	¾	4					
Laſhing — — —	2	4					
Tackle — —	3	16	Long Tackle	18	1	1	1
			Single	11	1	1	1
Strapping — —	3½	3					
Earings, 6 — — —	2	28					
Sheets, cabled, 2 — —	6½	86	Sin. Coak.	22	4		4
Strapping — —	6½	10					
Seizing — — —	1½	16					
Laſhers, 2 — — —	2	6					
Stoppers, 2 — — —	5½	4					
Tacks Taper and Cabled, 2 —	9	44					
Stoppers, 2 — — —	5½	4				2	2
Lanyards, 2 — —	2	6					
Lany. for the Pudden & Dolphin —	2	10					4
Slings, 1 Pair — — —	11½	10					1
Strap — — — —	11½	4					1
Seizing — — —	2	18					
Lanyard — — —	3½	7					
Quarter Tackle Pendants, 2 —	6	10	Do. thin Co.	17	2		
Falls, 2 — —	3½	80	S. thin Co.	19	2	2	2
				14	2	2	2
Strapping — —	5	9					
Seizings, 3 — —	1	14					
Puff Tackles, 4 No. — —	3½	180	Double	13	6	6	6
			Single	13	6	6	6
Strapping — —	4	12					
Seizing — — —	¾	32					
Stayſail Stay — — — worn	5	13					2
Collar — — —	4	2					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayſail Collar Seizing — —	1	6					
Lanyard — —	1½	4					
Hallyard, — — —	3	37	Single	11	3	1	1
Sheets, 2 — — —	4	13	Single	14	2	1	1
Tacks, 2 — — —	4	5					
Downhaller — — —	2	19	Single	8	1		
Strapping — — —	4	1½					
	3	2					
Studd. ſail Hallyards, Inn. 2 Pr.	3	48	Single	12	6		
Outer, 2 Pr. —	3½	92	Single	12	4		
Sheets, 2 Pair — —	2½	32					
Tacks, 2 Pair — —	3½	50	Single	12	2		
Strapping — —	3½	16					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	5	7					2
Falls, 2 — — —	2½	54	Double	11	2	2	2
			Single	11	2	2	2
Strapping — — —	3½	4					
Shrouds, fine, 4 Pair — —	6½	115	Dead Eyes	10	12		
Seizings Eye, 4 — —	1	24					
Throat, 8 — —	1	42					
End, 8 — — —	¾	36					
Lanyards, fine, 8 — —	3½	60					
Ratling — — —	1	150					
Standing Backſtays, fine, 3 Pr. —	6½	152	Dead Eyes	10	6		
Seizings Eye, 3 —	1	16					
Throat, 6 —	1	28					
End, 6 —	¾	24					
Lanyards, fine, 6	3½	30					
Breaſt Backſtay Runners, 2 —	4½	8	Single	14	2		
Falls, 2 — — —	2½	20	Double	10	4		
Strapping — —	3	3					
Stay Cabled 4 Strands, fine —	8	22					
Collar, fine — — —	7	4	Single	20	1		
Tackle — — —	3	24	Long Tackle	22	1		
			Single	14	1	1	1
Strapping — — —	4½	4					
Seizing — — —	1½	6					
	¾	6					
Laſhing — — —	2	7					
Preventer Stay, Cabled 4 ſtr. fine	6	21½					
Collar, fine —	5	3	Single	16	1		
Tackle — —	2½	22	Long Tackle	18	1		
			Single	10	1	1	1
Strapping —	4	3					
Seizing — —	1	8					
Laſhing the Col. —	1½	7					
Shifting Backſtays, fine, 1 Pair —	6½	38					2
Tackles, 4 No. — —	3	48	Double	12	4	4	4
			Single	12	4	4	4
Strapping — —	4	8					
Futtock Shrouds, fine, 4 Pair —	6½	42	Pia with D. E	10	12	12	12
Seizings Upper. 8 —	1	48					
Lower, 8 —	¾	42					
Ratling — —	1½	52					
Top Rope Pendants, fine, 2 —	8½	42	Sin. I. bound Braſs Sh. iv.	24			2

80 Gun Ship. 1615 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2 — —	4½	136	Treb. I. bo.	22	4		
Tye — — — —	5½	43	Flat Side	20	2		
			Double	20	1		
Strapping — — —	5½	8					
Seizing — — —	1	12					
Lashers at the Mast Head,	2½	15					
Yard — —	2	5					
Hallyards, 2 — — —	3½	133	Do. thin Co.	26	2		
			S. thin Co.	26	2	2	2
Strapping — — —	5	8					
Seizing — — —	¾	18					
Horses, 2 — — — —	4	13					
Stirrups, 6 — — —	3	9					6
Braces, 2 — — — —	3½	80	Single	14	2		
Pendants, 2 — — —	4½	9	Single	14	2		
Preventers, 2 — —	4	10					
Span ab. the Mizen Mast —	4½	5½					
Strapping — — —	4	3					
Lifts, 2 — — — —	3½	74	Double	12	2		
			Single	12	4		
Beckets, 2 — — —	4	3					
Strapping — — —	4	8					
Seizing — — —	¾	20					
Parrel Ropes, 2 — — —	3½	14	Parrel	24	1		
Racking and Seizing —	1	20					
Clew-lines, 2 — — —	4	100	Sin. Str. Bo.	14	4		
			Single	14	2		
Strapping — — —	4	8					
Bunt-lines, 2 — — — —	3	72	Single	11	6		
Strapping — — —	3	4					
Leech-lines, 2 — — — —	2½	34	Single	10	2		
Strapping — — —	2½	1					
Bowlines, 2 — — — —	4	66	Single	14	2		2
Bridles, 4 — — —	4	16					4
Strapping — — —	4	2½					
Seizing — — —	¾	6					
Frapping and Lashing —	2	12					
Reeftackle Pendants, 2 —	3½	48	Double	8	4	2	2
Falls, 2 — — — —	2	74					
Strapping — — —	2½	2½					
Earings, 10 — — — —	1½	45					
Sheets, 2 — — — —	8	57	Sin. Shoul.	24	2		
			¼ Double	24	2		
Straps for Sheet Blocks, 2 —	8	5	Thick & thin				
Quarter Blocks, 2 —	6	9					
Lashers for Quart. Blocks, 2	2½	9					
Seizings, 2 — — —	1½	24					
Span — — — worn	3	11					
Stoppers, 2 — — —	6	5					
Slings, 1 Pair — —	5	13					
Stayfail Hallyard —	3½	44	Single	13	1		
Strapping — —	4	1					
Sheets, 2 — — —	3	56	Single	11	2		
Strapping — —	3	2					
Pendant — —	4	4	Single	12	2		
Tack — — — —	3	5					
Downhaller — — —	2	25	Single	8	2		
Strapping — — —	2	1					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayfail Brails, 2 — — —	2	40	Single	7	2		2
Middle Stayfail Stay — —	4	21	Single	13	1		
Tackle —	2	22	Double	8	1		
			Single	8	1		
Hallyard — —	3¼	41	Single	12	2		
Sheets, 2 — —	3½	38		12	2		
Tack — — —	3	5					
Downhaller — —	2	29	Single	8	2		
Strapping — —	3	6					
	2	2					
Tricing-line —	2	17	Single	8	1		
Studdingfail Hallyards, 2 Pair	3½	100	Single	12	6		
Sheets, 2 Pair — —	3	48	Single	12	2		
Tacks, 2 Pair — —	3½	70	Single	12	4		
Downhallers, No. 2 — —	2	62	Single	8	2		6
Boom Tackles, 2 No. —	2	78	Double	8	2		
			Single	8	4		
Lash. for Booms — worn	2¼	20					
Tailing and Strapping —	3¼	18					
	2¼	6					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair — — —	3½	82					12
Lanyards, 6 — —	2	12					
Standing Backstays, 2 Pair —	3½	92	Dead Eyes	6	4		
Lanyards, 4 — —	2	20					
Stay cabled 4 Strands —	4	23	Single	12	1		
Strapping — — —	3½	1					
Flagstaff Stay — — —	2	25					1
Hallyards, 1 Pair — —	1½	64					
Tye — — — —	4	17					
Hallyard — — —	2	34	Double	8	1		
			Single	8	2		
Strapping — — — —	2½	1½					
Horses, 2 — — — —	3	9					
Braces, 2 — — — —	2	76	Single	8	2		
Pendants, 2 — — —	3	10	Single	8	2		
Strapping — — —	2	3					
Lifts single, 2 — — —	2¼	60	Single	8	2		2
Strapping — — —	2¼	1½					
Parrel Ropes, 2 — — —	2	5	Parrel	12	1		
Clewlines, 2 — — —	2	76	Single	7	6		
Strapping — — —	2	3					
Bowlines, 2 — — — —	2	72	Single	7	2		2
Bridles, 4 — — —	2	7					2
Strapping — — —	2	1					
Earings, 4 — — —		2	Tarr'd Lines				
Shifting Backstays, 1 Pair —	3½	46					
Tackles, 2 No. —	2	20	Double	7	2	2	2
			Single	7	2	2	2
Strapping — —	2¼	1½					
Stayfail Stay — — —	3	34	Single	10	1		
Hallyard — — —	2¼	46	Single	9	1		
Sheets, 2 — — —	2¼	46	Single	9	2		
Tack — — — —	2	7					
Downhaller — — — —	2	32	Single	7	2		
Strapping — —	2¼	1½					
	2	1					

80 Gun Ship. 1615 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	2	80	Single	7	6		
Sheets, 2 Pair	2	44					
Tacks, 2 Pair	2	51	Single	7	4		
Downhallers, 2	1½	44					2
Strapping	2	8					
MIZEN-MAST.							
Woolding	2¾	160					
Girdlines, 2	3	64	Single	12	2		
Strapping	3	1½					
Seizing	¾	6					
Laſhings, 2	1¾	8					
Burton Pendants, 1 Pair	5	7					2
Falls, 2	3	72	Double	11	2	2	2
			Single	11	2	2	2
Strapping	3½	4					
Shrouds, fine, 5 Pair	6½	100	Dead Eyes	10	12		
Seizings Eye, 5	1	24					
Throat, 10	1	22					
End, 10	¾	36					
Lanyards, fine, 10	3½	72					
Ratling	1	180					
Stay Cabled 4 Strands, fine	8	14					2
Seizings, 3	1	8					
Lanyard, fine	3	6					
Collar, fine	6½	3½					1
Seizing	1	3					
Laſhing	1½	3					
Crowfoot for the Top	1	70	Euphro	20	1		2
Tackle	1½	5					
Strapping	2	1					
Jeers, 1 Pair	5	48	Treble Co.	20	1		
			Double Co.	20	1		
Strapping	5½	7½					
Seizing	1½	10					
Laſhing at the Maſt Head	3	10					
Yard	2½	6					
Derrick	4	36	Double	14	1		
Span	4	4	Single	14	1		
Strapping	4	2½					
Seizing	1	12					
Laſhing	2	8					
Vang Pendants, 2	4	12	Double	8	2		
Falls, 2	2	40	Single	8	2	2	2
Strapping	3	1					
Bowlines, 2	3	24	Single	10	4		2
Strapping	3	3					
Truſs Pendant	4½	6					2
Fall	2½	20	Long Tack.	18	1	1	1
			Single	9	1	1	1
Strapping	3	3					
Seizing	¾	8					
Brails Peek Legs, 2 Pr.	2	12					
Falls	2	18	Single	7	6		
Middle	2½	23	Single	8	2		
Throat	3	25	Single	10	2		
Middle	2½	23	Single	9	2		
Foot	2½	21	Single	9	2		2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MIZEN-MAST CONTINUED.							
Brails Strapping	3	1					
	2¼	9					
Lacing Mizen to Yard	1½	28					
Maſt worn	3	20					
Earings, 2	2	10					
Peek Hallyards, 1 Pair	2	24	Single	7	1		1
Sheet	4	30	Double	14	1		1
			Single	14	1		
Strapping	4	3½					
Seizing	1	7					
Tack	3	5					
Slings, 1 Pair	5¼	6					
Stayſail Stay worn	4¼	15					2
Collar	4¼	3½					1
Seizing	4¼	3					
Laſhing	1	3					
Lanyard	2	6					
Hallyard	3	32	Single	11	3		
Sheets, 2	3	15	Single	11	2		1
Tack	2¾	4					
Downhaller	2	15	Single	7	2		
Strapping	3½	3					
	2	2					
Brails, 2	2	28	Single	7	2		2
Driver Hallyards, 2 Pair	3	40	Single	10	4	1	2
Sheets, 2	3	19	Single	10	2		
Tacks, 2	3	28	Single	10	2		
Downhaller	2	23	Single	7	1		
Strapping	3	7					
Laſhing	¾	14					
CROSS-JACK-YARD.							
Span about the Cap	4	2					
Braces, 2	2¼	60	Single	9	2		
Pendants, 2	3¾	6	Single	9	2		
Preventer, 2	3	7					
Strapping	2¼	2					
Lifts Running, 2	2¾	52	Single	9	4		
Strapping	2¾	3					
Slings, 1 Pair	5	6	Sin.do.Scord	15	1		
Strapping	4	2					
Seizing	1	3½					
Laſhing	1¾	5					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	4	53	Dead Eyes	8	8		
Seizings, 6		3	Tarr'd Lines				
Lanyards, fine, 2	2½	32					
Ratling	1	68					
Standing Backſtays, fine, 1 Pair	4	55	Dead Eyes	8	4		
Seizings, 4		1	Tarr'd Line				
Lanyards, fine, 2	2½	16					
Stay cabled, 4 Strands, fine	4½	13					
Lanyard, fine	2	6					2
Collar	3¼	3	Single	13	1		
Seizing and Laſhing	1	6					
Flag-ſtaff Stay	2	13					1
Hallyards, 1 Pair	1½	42					
Shifting Backſtays, fine, 1 No.	4	14					1

80 Gun Ship. 1615 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backſtay Tackle	2	12	Double	8	1	1	1
			Single	8	1	1	1
Strapping	2½	4					
Futtock Shrouds, fine, 3 Pr.	4	16	Plates with Dead Eyes	8	8	8	8
Seizings, 6		2	Tar'd-Lines				
Ratling	1	18					
Top Rope Pendants, fine, 2	5	17	Single I. bo.	14	1		1
Falls, 2	3	42	Double D°	12	2		
Tye	4	16	Sin. do. Scord	13	1		
Hallyard	2½	46	Double thin	12	1		
			Single thin	12	1	1	1
Strapping	3½	4					
Laſhing	1	3					
Horſes, 2	3	9					
Stirrups, 4	2½	4					4
Braces, 2	2½	49	Single	9	2		
Pendants, 2	3	4½	Single	9	2		
Strapping	2½	1½					
Lifts, 2	2½	52	Double	9	2		
			Single	9	2		
Strapping	3	3					
Parrel Ropes, 2	2½	5½	Parrel	15	1		
			Strap bound	9	4		
Clew-lines, 2	2½	62	Single	9	2		
Strapping	2½	4					
Buntline	2	46	Single	8	4		
Strapping	2	1					
Leechlines, 2	2	18	Single	7	2		
Strapping	2	1					
Bow-lines, 2	2	40	Single	8	2		2
Bridles, 4	2	8					2
Strapping	2	1					
Reef Tackle Pendants, 2	3	33					
Falls, 2	1½	38	Double	7	2		
			Single	7	2		
Strapping	2	1					
Earings, 8	1½	30					
Sheets, 2	4½	36	Sin. Should.	14	2		
			Single	14	1		
Strapping	5	2					
	4	3					
Seizing	¾	14					
Laſhing	1½	5					
Stayſail Hallyard	2	27	Single	8	1		
Sheets, 2	2	28	Single	8	2		
Tacks, 2	2	2					
Downhaller	1½	18	Single	6	1		
Strapping	2	2					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	2½	38					8
Lanyards, 4	1½	12					
Backſtays, 1 Pair	2½	35					4
Lanyards, 2	1½	6					
Stay	3	13					1
Lanyard	1½	3½					
Tye	3	7					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1½	27	Single	5	2		
Horſes, 2	2	6					
Braces, 2	1½	40	Single	5	2		
Lifts, ſingle, 2	2	30					
Parrel Ropes, 2	1½	4	Parrel	6	1		2
Clew-lines, 2	1½	46	Single	5	2		
Bow-lines, 2	1½	44					
Bridles, 4	1½	3					4
Earings, 2		1½	Tarr'd-Line				
Strapping	1½	3					
NECESSARY ROPES.							
Viol Cabled	13½	45	Single Coak.	56	1		
Strapping	11	10					
Seizing	2	12					
Laſhing	4½	10					
Winding Tackle Pendant	12	13	Co. Fourfold	22	1		
Fall	4½	80	Treble	22	1		
			Single	22	1		
Strapping	7	18					
Seizing	1½	20					
Catt Falls, 2	5	120	Treble I. bo.	24	2		
			Braſs Shiv.				
Lanyards, 2	3	30	Single	10	2		4
Stoppers 2 No.	5	6					
Guy's Maſt-Head, 2	8½	30					
Fore, 2	8½	20					
After, 2	5½	24					
Fiſh Tackle Pendant	9	14	Single			Fiſh	
			Coaked	27	1	1	1
Fall	4½	50	Long Tack.	36	2		
Strapping	6	6					
	5½	5					
Seizing	1½	10					
	1	10					
Lanyard	3	16					
Anchor Stock Tacklefall	3	30	Double	12	1	1	1
			Single	12	1	1	1
Bill Pendant	5	12				1	2
Strapping	4	2					
Seizing	2½	9					
Stoppers Sheet Anchor, 2	8½	10					
Beſt Bower, 2	8½	10					
Small Bower, 2	8½	10					
Spare, 2	8½	10					
Seizings	1	36					
Wing cabled, 2 No.	8½	20					
Dog, 2 No.	7½	20					
Seizing	1	36					
Stream Anchor, 2	5	7					
Kedge, 2	4	6					
Deck & Bit, cabled, 10 No.	11	36					14
Lanyards, 10 No.	3	50					
Seizing	2	49					
	1	49					

80 Gun Ship. 1615 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	9	18					
Ditto — — — —	8	18					
Ditto — — —	7	20					
Ditto — — —	6½	8					
Ditto — — — —	6	8					
Ditto — — — —	5½	12					
Ditto — — —	5	12					
Ditto — — — —	4	6					
Ditto — — —							
Shank painters Sh. Anchor cab.	8	11					
Beſt Bower, 2 —	7½	8				1	
Small Bower, 2 —	7½	8				1	
Spare, Cabled, 2 —	8	11					
Seizing —	1	18					
Ropes Buoy Sheet Anchor cabled	8	24					
Beſt Bower Cabled —	8	24					
Small Bower Cabled —	8	24					
Seizing —	1	18					
Stream Anch. Cabled —	5	30					
Kedge Cabled — —	4	30					
Davit, 2 — — —worn	3½	12					
Bell — — — —	3	3				1	
Buckets — — —		1	Coil Laſhing				
Swab, 2 — worn	3½	36	Single	12	2		
Entering, 6 — —	3½	30					
Paſſing — — —	5	60				2	
Lanyard — —	2½	12					
Slip — — — —	3	40					
Quarters, Poop and Stantion in the Waſte, — —	3½	150				16	
Fore, Main & Mizen Tops		1	Coil Laſhing				
Wheel or Tiller White —	4	30	Single	13	2	2	
Strapping — —	4	1½					
Seizing — —	1	6					
Puddening of Anchors, worn	4	130	Old Canvas.	yd			
	3	40		20			
Seizings, 4	1½	96					
Slings Buoy, 4 Pair — —	4	56				6	
Lanyards, 3 —worn	3	15					
Seizings, 6 —	1	42					
Gun — — —	8	7					
Nut — — —	7	4					
But, 4 Pair — —	5	20				4	
Hogſhead, 4 Pair — —	4	16				4	
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys —worn	4	6					
Swabs — worn	3½	24					
Cable Bends, 6 — —	3	64					
Rudder Pendants, cabled, 2 —	7	11				4	
Lanyards, 2 —	2½	10					
Falls, 2 — — —	3½	50	Long Tackle Single	28	2	2	2
				14	2	2	2
Strapping — —	4½	5					
Seizing — — —	½	12					
Stern Ladders, 4 Strands, 2 worn	6	32					
Middle Rope, 2 worn	2	23					
Laſhing — worn	2	12					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 — —	8	7					
	5	2					
Swifters for Capſton-Bars —	2	60					
Laſhing-Cables between Decks Sheep-Pens, Steep-Tubs, Tubs in the Tops, & Booms		5	Coils Laſhing				
Nettings for the Quart. Waſte, Tops, and Barricadoes —	1½	900					
Hallyard for Top Lanthorn —	1	28	Single	5	1		
Enſigns — —	1½	36					
Jacks — —	1	12					
For Colours Head Line —		4	White-lines				
Rope Bands —		6 lb	Marlines				
Pendant Slings —	¾	30					
Awnings Ridge and Side Rope	3½	128	Single	12	3		
Stops — — —	1	40					
				32	1		
Crowfeet — —	1	100	Euphro	22	1		
				20	1		
Hallyard — —	1½	38					
Ridge Tackle Fall —	2½	10	Double	8	1		
			Single	8	1		
For different Uſes of the Ship			Snatch Iron	24	4	4	
			Bo. Hooks	16	4	4	4
			Coaked	14	4	4	4
Strapping — —	4½	8					
Seizing — —	½	30					
LONGBOAT.							
Burton Pendants, 1 Pair — —	4	3½	Single	11	2		2
Runner — — —	3	12					
Falls, 2 — —	2½	20	Double	9	2	2	2
			Single	9	2	2	2
Strapping — —	3	3					
Shrouds, 2 Pair — —	4	22	Dead Eyes	5	4		
Lanyards, 4 — —	1½	8					
Stay — — — —	4½	7	Dead Eyes	5	1		
Lanyard — —	1½	2½					
Tye — — — —	3	7	Single	9	1		
Main Hallyard — —	2	18	Single	7	2		
Outer Hallyard —	2	20	Doub. I. bo.	7	1		
			Single	7	1		1
Sheet — — —	2	15	Double	8	1		
			Single	8	1		1
Wood Hoops, 12							
Downhaller — —	1½	15	Single	5	1		
Strapping — —	2	8					
Topping Lift — —	2	15					
Fore Hallyard — —	2	16	Single	7	1		
Sheet — — —	2	5					2
Tack — — —	1	1					
Bowline — —	2	1½					1
Jib Hallyards — —	2	22	Single	7	2	1	1
Sheet — — —	2	10					2
Outhaller — —	2½	10	Iron Trave		1		
Innhaller — —	1	7					
Boat-Rope, cabled — —	8	40					
Lanyard — —	2½	4					

80 Gun Ship. 1615 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	5	40					
Grapnel-Rope, cabled — —	4½	50					
Painter — — — —	4	7					
Sternfaſt — — worn	3½	12					
Fenders, cabled, 6 — worn	6	14					
Lanyards, 6 — —	2	12					
Rudder Lanyards, 2 — —	2	2½					
PINNACE.							
Hallyards Main and Fore, 2 —	1¾	20					
Sheets, 4 — — —	1¾	20					
Grapnel-Rope, cabled — —	3¼	70					
Painter — — —	3¼	10					4
Sternfaſt -- — worn	2¼	10					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5½	10				8	12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					
YAWL OR CUTTER.							
Hallyards *(if Cutters)* 2 Pair —	2	12	Iron Trave		2		
Sheets, 4 — — —	2	8					
	1¼	8					
Grapnel-Rope, cabled —	3¼	80					
Painter — — —	3¼	10					
Slings, 2 Pair —	5½	10				8	12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 21, Article 2, by Gammonings, 2 —| 8 | 155 | is meant, Two Gammonings are neceſſary, made of Rope 8 Inches in Circumference, containing in the Whole 160 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
A SHIP OF 74 GUNS,
Being of 1799 Tons Burthen.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	3½	190					
Gammonings, 7	8	140					
Shrouds fine, 1 Pair	8	38	Hearts	14	4	4	4
Collars fine, 2	6½	12	Hearts	14	4		
Seizings, 2	1	16					
Laſhings, 2	2	12					
Lanyards fine, 2	3½	20					
Bobſtays cabled fine 2 Pair	8	38	Hearts	14	3		
Collars fine 2	8	9	Hearts	14	3		
Seizings, 2	1½	30					
Laſhings, 2	2	9					
Lanyards fine, 2	4	18					
Horſes, 2	5	22				6	
Straps, 2	3½	3½				4	
Lanyards, 2	2	8					
SPRITSAIL.							
Horſes, 2	4	13					
Stirrups, 6	3	6				6	
Braces, 2	3½	75	Double	12	4		
Pendants, 2	4	5	Single	12	4		
Strapping	3½	10					
Lifts, 2	3½	58	Single	12	4		
Beckets, 2	3½	4					
Strapping	4	4					
Seizing	¾	9					
Standing, 2	4	10				4	
Straps, 2	4½	4					
Lanyards, 2	2	6					
Hallyard	3½	40	Long Tackle	24	1	1	1
			Single	12	1		
Strapping	4½	3					
Seizing and Laſhing	¾	6					
Slings, 1 Pair	6½	6					
Seizing and Racking	1½	10					
Clew-Lines, 2	2½	45	Strap bound	10	4		
			Single	10	2		
Strapping	3	6					
Buntlines, 2	2	34	Single	8	2		
Strapping	2½	1					
Earings, 4	1½	12					
Sheets cabled ſingle, 2	5	40					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
JIBB.							
Horſes, 1	4	20					
Seizings, 2		½	of a Tar'd Line				
Guy Pendants, 1 Pair	4½	34	Single	13	2		
Falls, 2	3	36	Single	11	4		
Strapping	4	1½					
	3	2					
Laſhers, 4	1	14					
Out-Haller	4	12					
Tackle-Fall	3½	30	Single	9	2		
Strapping	2½	1					
Stay	4½	33	Single	14	1		
Strapping	4½	1					
Tacklefall	2½	26	Double	9	1		
			Single	9	1		
Strapping	2½	1					
Hallyard	4	46	Single	13	1		
Strapping	4	1					
Downhaller	2½	40	Single	9	1		
Sheets ſingle, 2	3½	50	Single	11	2		
Pendants, 1 Pair	4½	12	Single	11	2		
SPRITSAIL TOPSAIL.							
Horſes, 2	3	9					
Braces, 2	2½	54	Single	9	2		
Strapping	2	1					
Lifts ſingle, 2	2	40	Single	9	2		
Strapping	2	1					
Hallyard	2½	32	Single	9	2		
Strapping	2½	2½					
Laſhing	½	6					
Parrel-Ropes, 2	2½	5	Parrel	12	1		
Clewlines, 2	2	46	Single	7	4		
Strapping	2	2					
Lacing and Earings, 2	1	40					
FORE-MAST.							
Woolding	3½	280					
Girdlines, 2	5	77	Single	16	2		
Strapping	5	2					
Seizing	¾	7					
Laſhings, 2	2½	18					

74 Gun Ship. 1799 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 2 Pr.	11	19	Sin. Coaked	24	2		8
Strapping — —	7½	4					
Seizing — —	1½	8	Double				
Runners of Tackles, 4 —	7½	36	Thin Coak	21	4		
Strapping — —	6	6					
Falls of Tackles, 4 — —	4	190	Single	26	4	4	4
			Thin Coak	14	4	4	4
Strapping —	5½	10					
Seizing — —	1	45					
Shrouds cabled fine, 7 Pair —	11	207	Dead Eyes	17	18		
Seizings Eye, 6 — —	1½	45					
Throat, 14 — —	1½	87½					
End, 14 — —	1½	87½					
Lanyards fine, 14 — —	5½	108					
Ratling — — —	1½	360					
Stay cabled fine 4 Strands —	17½	14½	Heart	24	1		
Seizings, 3 — —	2	25					
Lanyard fine — —	4	17					
Collar cab. 4 Str. fine doub.	9½	8½	Heart	24	1		
Seizings, 2 — —	1½	12					
Laſhing — —	2½	6					
Preventer Stay cabled 4 Str. fine	11½	14½	Heart	16	1		
Lanyard fine —	4½	10					
Coll. cab. 4 Str. fine double —	6½	7	Heart	16	1		
Laſhing —	2½	6					
Seizings, 2 —	1½	18					
Catharpin Legs, 4 —	7	14					
Seizings, 8 —	1½	60					
Crowfoot for the Top — —	1½	130	Euphro	13	1		2
Tackle — —	2	10					
Strapping	2	1½					
Jeers Tye — — —	7½	130	Treb. Coak.	26	2		
Falls, 2 — —			Doub. Coak.	26	2		
Strapping — — —	8½	24					
Seizing — — —	2	32					
Laſhing at the Maſt Head —	4½	40					
Yard — —	3½	12					
Stoppers, 2 — —	6	6					
Horſes, 2 — — — —	5½	16				2	
Stirrups, 6 — — —	4	15				8	
Seizings, 4 — — —	½	18					
Lanyard 1 — — —	2	6					
Yard Tackle Pendants, 2 —	7	9	Do. thin Co.	17	2		
Falls, 2 — —	3½	100	Dou. thin Co.	20	2	2	2
			Single	13	2		
Strapping — —	5½	9					
Seizing — —	1	16					
Inner Tric. Lines, 2	2½	40	Single	8	2		
Outer Tric. Lines, 2	2	40	Single	7	4		
Strapping — —	2	6					
Braces, 2 — — —	4½	108	Single Coak.	16	4		
Pendants, 2 — —	5½	10	Single Coak.	16	2		
Preventer, 2 — —	4½	11					
Strapping — — —	5	5					
Seizing — — —	½	18					
Laſhing — — —	1½	24					
Preventers *(in War only)*	3½	100	Single	13	4		

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Braces Preventer Strapping —	3½	3					
Seizing — —	½	10					
Lifts, 2 — — — —	4½	110	Single	16	6		
Span for the Cap — —	6½	8					
Short Span — — —	4½	2½					
Strapping — — —	5	5					
Seizing — — —	¼	18					
Jigger Tackle, No. 2 —	2½	30	Double	10	2		
			Single	10	2		
Strapping —	3½	4					
Truſs Pendants, 2 — — —	8	16					4
Falls, 2 — — —	3	56	Double	11	4	4	4
Strapping — —	3½	4					
Eye Seizings, 2 —	1½	14					
Nave Line — —	2	20	Single	7	1		
Puddening the Yard — worn	6	12					
Clew-garnets, 2 — — —	4	72	Sin. Strapbo.	15	4		
			Single	15	2		
Straps ab. the Yard	4	8					
Strapping — —	4	2					
Seizing — —	¼	18					
Laſhing — —	1	4					
Buntline Legs, 4 — — —	3	50	Double	11	4		
Falls, 2 — — — —	3	50	Single	10	8		
Strapping — — —	3½	12					
Leechline Legs, 2 — — —	2½	52	Double	11	4		
Falls, 2 — — — —	2½	52	Single	10	8		
Strapping — — —	3½	12					
Slablines, 2 — — —	2½	42	Single	9	2		
Strapping — — —	2½	1					
Bowlines, 2 — — — —	4½	60	Single	16	4		2
Bridles, 2 — — —	4½	6					
Strapping — — —	4½	4½					
Seizing — — —	2½	12					
Laſhing — — —	2½	12					
Earings, 6 — — — —	2	28					
Sheets Cabled, 2 — — —	7	84	Sin. Coaked	24	2		2
Strapping — — —	7	4½					
Seizing — — —	1	14					
Stoppers, 2 — — —	5½	4					
Tacks Taper and Cabled, 2 —	9	45	Shouldered	26	2		
Strapping — — —	6½	6					
Seizing — — —	1½	8					
Stoppers, 2 — — —	6	5				2	2
Lanyards, 2 —	2	5					
Gammoning the Bumkin, worn —	4½	16				2	6
Lanyards, 2 — — —	2	12					
Lany. for Pudden & Dolphin —	1½	10					4
Slings, 1 Pair — — —	11½	9					1
Strap — — —	11½	4					1
Seizings, 2 — — —	2	18					
Lanyard — — —	3½	7					
Stayſail Hallyard — —	4	30	Single	13	2		
Sheets, 2 — — —	4	30	Single	12	3		
Tack — — —	3	2					
Downhaller — —	2½	28	Single	9	1		
Strapping — —	4	4					
	2½	1					

74 Gun Ship. 1799 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Studd. Sail Hallyard, Inner, 2 Pr.	3	48	Single	12	6		
Outer, 2 Pr.	3½	88	Single	12	4		
Sheets, 2 Pr.	3	15					
Tacks, 2 Pr.	3½	68	Single	12	2		
Strapping	3½	16					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair	5½	7					2
Falls, 2	2½	60	Double	10	2	2	2
			Single	10	2	2	2
Strapping	3½	4					
Shrouds fine 4 Pr.	7	114	Dead Eyes	11	12		
Seizings Eye, 4	1	24					
Throat, 8	1	42					
End, 8	¾	36					
Lanyards fine, 8	3½	60					
Ratling	1	150					
Standing Backstays fine 3 Pr.	7	158	Dead Eyes	11	6		
Seizings Eye, 3	1	16					
Throat, 6	1	28					
End, 6	¾	28					
Lanyards fine, 6	3½	30					
Breast Backstay Runners, 2	5	8	Single	14	2		
Falls, 2	2½	20	Double	10	4		
Strapping	3	3					
Stay Cabled 4 Strands fine	8½	24					
Collar fine	6½	3½	Single	20	1		
Tackle	3½	24	Long Tackle	22	1		
			Single	14	1		
Strapping	5	3					
Seizing	1½	6					
	½	6					
Preventer Stay cab. 4 Str. fine	6½	24					
Collar, fine	5½	3	Single				
Tackle	3	21	Long Tackle	18	1		
			Single	12	1		
Strapping	4	3					
Seizing	1	8					
Lashing the Col.	2½	6					
Shifting Backstays, fine, 1 Pair	7	40					
Tackles 4 No.	3	48	Double	12	4	4	4
			Single	12	4	4	4
Strapping	4	8					
Futtock Shrouds, fine, 4 Pair	7	42	Plates with Dead Eyes	11	12	12	12
Seizing Upper, 8	1	48					
Lower, 8	¾	42					
Ratling	1½	50					
Top Rope Pendants, fine, 2	9	42	S. Brafs Shiv. Iron Bound	26	2		2
Falls, 2	5	152	Treb. Ir. Bo. Coaked	22	4		
Tye	6	44	Flat Side	20	2		
			Doub. Coak.	20	1		
Strapping	6	8					
Seizing	1	12					
Lashers at the Mast Head, 2	2½	15					
Yard	2	5					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2	3½	136	Do. thin Co.	26	2		
			Sin. Ditto	26	2	2	2
Strapping	5	8					
Seizing	¾	18					
Horses, 2	4	12					
Stirrups, 6	3	8½					6
Braces, 2	3½	166	Single	14	4		
Pendants, 2	4½	9	Single	14	2		
Preventer, 2	4	10					
Strapping	4	5					
Lifts, 2	3½	76	Double	12	2		
			Single	12	4		
Beckets, 2	4	3					
Strapping	4	8					
Seizing	¾	20					
Parrel Ropes, 2	3½	14	Parrel	24	1		
Racking and Seizing	1	20					
Clewlines, 2	4	92	Sin. Str. bo.	14	4		
			Single	14	2		
Strapping	4	8					
Buntlines, 2	3	74	Single				
Strapping	3	3					
Leechlines, 2	2½	34	Single	10	2		
Strapping	2½	1					
Bowlines, 2	3½	68	Single	12	2		2
Bridles, 4	3½	14					2
Strapping	3½	2					
Lashing	1	12					
Reefstackle Pendants, 2	4	45	Double	9	4	2	2
Falls, 2	2½	66					
Strapping	3	3					
Earings, 10	1½	40					
Sheets, 2	8	56	Sin. Shoul.	26	2		
			½ do. th & thin	26	2		
Straps for Sheet Blocks, 2	8	5	Coaked				
Quarter Blocks, 2	6	10					
Lashers for Quarter Blocks, 2	2½	10					
Seizings, 2	1½	24					
Span — worn	3½	10					
Stoppers, 2	6½	5					
Slings, 1 Pair	5	12					
Stayfail Stay	4	25	Single	13	1		
Tackle	2½	15	Double	10	1		
			Single	9	1		
Hallyard	3½	41	Single				
Strapping	3½	1½					
Sheets, 2	4	34	Single	13	2		
Strapping	4	1½					
Outhaller	2½	21	Single	9	1		
Downhaller	2½	32	Single	9	1		
Strapping	2½	2					
Studdingsail Hallyards, 2 Pair	3½	98	Single	12	6		
Sheets, 2 Pair	3	50	Single	12	2		
Tacks, 2 Pair	3½	76	Single	12	4		
Downhallers, 2	2	64	Single	9	2		6
Boom Tackles, 2	2	80	Double	8	2		
			Single	8	4		
Tails and Straps, 2	2½	6					
	3½	18					

74 Gun Ship. 1799 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	4	80					12
Lanyards, 6 — — —	2	12					
Standing Backſtays, 2 Pair —	4	96	Dead Eyes	7	4		
Lanyards, 4 — — —	2	20					
Stay cabled 4 Strands — —	4½	30	Single	12	1		
Strapping — — —	3½	1½					
Tackle — — — {	2	18	Double	7	1		
			Single	7	1		
Strapping — — —	2½	1½					
Flagſtaff Stay — —	2	31					1
Hallyards, 1 Pair — —	1½	72					
Tye — — — — —	4	17					
Hallyard — — {	2	30	Double	8	1		
			Single	8	2		
Strapping — — —	2½	1½					
Horſes, 2 — — — —	3	9					
Braces, 2 — — — — —	2	108	Single	8	6		
Pendants, 2 — — —	3	10	Single	8	2		
Strapping — — —	2	4					
Lifts ſingle, 2 — — — —	2½	59	Single	8	2		2
Strapping — — —	2½	1½					
Parrel Ropes, 2 — — —	2	5	Parrel	12	1		
Clewlines, 2 — — —	2	76	Single	7	6		
Strapping — — —	2	4					
Bowlines, 2 — — — —	2	74	Single	7	2		4
Bridles, 2 — — —	2	5					2
Strapping — — —	2	2					
Earings, 2 No. — — — —		2	Tarr'd Lines				
Shifting Backſtays, 1 Pair —	4	46					2
Tackles, 2 No. — {	2	20	Double	7	2	2	2
			Single	7	2	2	2
Strapping — —	2½	1½					
Studdingſail Hallyards, 2 Pair —	2	80	Single	7	6		
Sheets, 1 Pair — —	2	23					
Tacks, 2 Pair — —	2	50	Single	7	4		
Downhallers, 2 No. — —	1½	22					1
Strapping — — —	2	8					
MAIN-MAST.							
Woolding — — —	3½	350					
Girdlines, 2 — — —	5	84	Single	16	2		
Strapping — — —	5	2					
Seizing — — —	¾	7					
Laſhings, 2 — — —	2½	18					
Pendants of Tack. cab. fine, 2 Pr.	11	20	Sin. Coak.	24	2		8
Strapping —	7½	4					
Seizing — —	1½	8					
Runners of Tackles, 4 — —	7½	42	Do. thin Co.	21	4		
Strapping — —	6	6					
Falls of Tackles, 4 — — —	4	206	Sin. thin Co.	26	4	4	4
Strapping — —	5½	10					
Seizing — —	1	40					
Shrouds cabled, fine, 7 Pair —	11	238	Dead Eyes	17	18		
Seizings Eye, 6 — —	1½	45					
Throat, 14 — —	1½	87½					
End 14 — — —	1½	87½					
Lanyards, fine, 14 — —	5½	108					
Ratling — — — —	1½	370					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Stay cabled 4 Strands, fine —	18½	22½	Heart	26	1		
Seizings, 4 — — —	2	25					
Lanyard, fine — —	5½	20					
Collar cabled 4 Strands, fine	13½	11	Heart	26	1		
Worming — —	2	60					
Seizings, 3 — —	2	20					
Laſhing — — worn	4	25					
Preventer Stay cab. 4 Strands fine	13	19½	Heart	17	1		
Lanyard, fine —	5	10					
Col. cab. 4 ſtr. fine. do.	6	6	Heart	17	1		
Laſhing — —	2	8					
Seizings, 3 — —	1½	20					
Catharpin Legs, 4 — — —	7	18					
Seizings, 8 — —	1½	60					
Stay Tackle Pendant — —	6	5	Do. thin Co.	18	1		
Fall — — — {	3½	46	S. thin Co.	20	1	1	2
				14	1	1	2
Strapping — —	4½	3½					
Seizing — —	¾	12					
Laſhing — —	1½	12					
			Do. thin Co.	18	1		
Fore-Stay Tackle Fall — — {	3½	44	S. thin Co.	20	1	1	2
				14	1	1	1
Strapping —	4½	3½					
Seizing —	¾	12					
Crowfoot for the Top — —	1½	145	Euphro	34	1		2
Tackle — — —	2	10					
Strapping — —	2½	1½					
Jeers { Tye — — — {	8	148	Treb. Coak.	28	2		
Falls, 2 — — — {			Doub. Coak.	28	2		
Strapping — —	9	24					
Seizing — — — —	2	32					
Laſhers to the Maſt Head, 2	4½	45					
Yard — —	3½	12					
Stoppers, 2 — — —	6	6					
Horſes, 2 — — —	5½	18					2
Stirrups, 6 — — —	4	16					8
Seizings, 4 — — —	¾	18					
Lanyard — — —	2	6					
Yard Tackle Pendants, 2 —	7	10	Do. thin Co.	17	2		
Falls, 2 — — {	3½	110	S. thin Co.	20	2	2	2
			Single	13	2		
Strapping — —	5½	9					
Seizing — —	1	16					
Inner Tricing-Lines, 2	2½	44	Single	8	2		
Outer Tricing-Lines, 2	2	44	Single	7	4		
Strapping — —	2	6					
Braces, 2 — — —	4½	104	Sin. Coak.	16	2		
Pendants, 2 — —	5½	10	Sin. Coak.	16	2		
Preventer, 2 — —	4½	11					
Strapping — —	5	4					
Seizing — — —	¾	10					
Preventers *(in War only)* 2	3½	96	Single	13	4		
Strapping — —	3½	3					
Seizing — — —	¾	10					
Lifts, 2 — — — —	4½	128	Single	16	6		
Span for the Cap — —	6½	9					
Short Span — —	4½	2½					

74 Gun Ship. 1799 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — —	5	5					
Seizing — — —	1/4	18					
Jigger Tackles, 2 —	2 1/2	30	Double	10	2		
			Single	10	2		
Strapping — —	3 1/2	4					
Truss Pendants, 2 — —	8	18					4
Falls, 2 — — —	3	64	Double	11	4	4	4
Strapping — —	3 1/2	4					
Eye Seizings, 2	1 1/2	14					
Nave-Line — — —	2	23	Single	7	1		
Puddening the Yard — worn	6	14					
Clewgarnets, 2 — — —	4	84	Strapbound	15	4		
			Single	15	2		
Strap about the Yard —	4	8					
Strapping — —	4	2					
Seizing — — —	1/4	18					
Lashing — — —	1	14					
Buntline Legs, 4 — —	3	54	Double	11	2		
Falls, 2 — — —	3	62	Single	11	10		
Strapping — —	3 1/2	12					
Leechline Legs, 2 — —	2 1/2	56	Double	11	4		
Falls, 2 — — —	2 1/2	52	Single	10	10		
Strapping — —	3 1/2	13					
Slablines, 2 — — —	2 1/2	44	Single	9	2		
Strapping — —	2 1/2	1					
Bowlines, 2 — — —	4 1/2	58	Double	16	1		4
Bridles, 4 — —	4 1/2	16					2
Strapping — —	4 1/2	4					
Seizing — — —	1/4	4					
Lashing — — —	2	4					
Tackle — — —	3	16	Long Tackle	20	1	1	1
			Single	11	1	1	1
Strapping — —	3 1/2	3					
Earings, 6 — — —	2	28					
Sheets, cabled, 2 — —	7 1/2	90	Sin. Coak.	24	4		4
Strapping — —	7 1/2	10					
Seizing — — —	1 1/2	16					
Lashers, 2 — — —	2	6					
Stoppers, 2 — — —	6	4					
Tacks Taper and Cabled, 2 —	9 1/2	48					
Stoppers, 2 — — —	6	4				2	2
Lanyards, 2 — —	2	6					
Lany. for the Pudden & Dolphin —	2	10					4
Slings, 1 Pair — — —	1 1 1/2	10					1
Strap — — — —	1 1 1/2	4					1
Seizing — — —	2	18					
Lanyard — — —	3 1/2	7					
Quarter Tackle Pendants, 2 —	6	10	Do. thin Co.	18	2		
Falls, 2 — —	3 1/2	80	S. thin Co.	20	2	2	2
				14	2	2	2
Strapping — —	5	9					
Seizings, 3 — —	1	14					
Luff Tackles, 4 No. — —	3 1/2	180	Double	13	6	6	6
			Single	13	6	6	6
Strapping — —	14	12					
Seizing — — —	1/4	32					
Stayfail Stay — — — worn	5	14					2
Collar — — —	4	2					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayfail Collar Seizing — —	1	6					
Lanyard — —	1 1/2	4					
Hallyard, — — —	3	42	Single	11	3	1	1
Sheets, 2 — — —	4	14	Single	14	2	1	1
Tacks, 2 — — —	4	5					
Downhaller — — —	2 1/2	20	Single	9	1		
Strapping — — —	4	1 1/2					
	3	2					
Studd. sail Hallyards, Inn. 2 Pr.	3	57	Single	12	6		
Outer, 2 Pr. —	3 1/2	104	Single	12	4		
Sheets, 2 Pair — —	3	34					
Tacks, 2 Pair — —	3 1/2	52	Single	12	2		
Strapping — — —	3 1/2	16					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair —	5 1/2	7 1/2					2
Falls, 2 — — —	2 1/2	60	Double	11	2	2	2
			Single	11	2	2	2
Strapping — — —	3 1/2	4					
Shrouds, fine, 4 Pair — —	7	121	Dead Eyes	11	12		
Seizings Eye, 4 — —	1	24					
Throat, 8 — —	1	42					
End, 8 — — —	1/4	36					
Lanyards, fine, 8 — —	3 1/2	60					
Ratling — — —	1	154					
Standing Backstays, fine, 3 Pr. —	7	173	Dead Eyes	11	6		
Seizings Eye, 3 —	1	16					
Throat, 6 —	1	28					
End, 6 —	3/4	24					
Lanyards, fine, 6	3 1/2	30					
Breast Backstay Runners, 2 —	5	8	Single	14	2		
Falls, 2 — — —	2 1/2	20	Double	10	4		
Strapping — —	3	3					
Stay Cabled 4 Strands, fine —	8 1/2	24					
Collar, fine — — —	7	4	Single	20	1		
Tackle — — —	3 1/2	24	Long Tackle	22	1		
			Single	14	1	1	1
Strapping — — —	4 1/2	4					
Seizing — — —	1 1/2	6					
	1/4	6					
Lashing — — —	2	7					
Preventer Stay, Cabled 4 str. fine	6 1/2	23 1/2					
Collar, fine —	5	3	Single	16	1		
Tackle — — —	3	24	Long Tackle	18	1		
			Single	12	1	1	1
Strapping —	4	3					
Seizing — —	1	8					
Lashing the Col. —	1 1/2	7					
Shifting Backstays, fine, 1 Pair —	7	43					2
Tackles, 4 No. —	3	48	Double	12	4	4	4
			Single	12	4	4	4
Strapping — —	4	8					
Futtock Shrouds, fine, 4 Pair —	7	45	Pla with D.E	11	12	12	12
Seizings Upper. 8 —	1	48					
Lower, 8 —	1/2	42					
Ratling — —	1 1/2	55					
Top Rope Pendants, fine, 2	9	46	Sin. I. bound Brass Shiv.	26	2		2

74 Gun Ship. 1799 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2	4½	146	Treb. I. bo.	22	4		
			Flat Side	22	2		
Tye	6	46	Double	22	1		
Strapping	6	8					
Seizing	1	12					
Laſhers at the Maſt Head, Yard	2½	15					
	2	5					
Hallyards, 2	3½	144	Do. thin Co.	26	2		
			S. thin Co.	26	2	2	2
Strapping	5	8					
Seizing	¾	18					
Horſes, 2	4½	13					
Stirrups, 6	3	9				6	
Braces, 2	3½	86	Single	14	2		
Pendants, 2	4½	9	Single	14	2		
Preventers, 2	4	10					
Span ab. the Mizen Maſt	4½	6					
Strapping	4	3					
Lifts, 2	3½	80	Double	12	2		
			Single	12	4		
Beckets, 2	4	3					
Strapping	4	8					
Seizing	¾	20					
Parrel Ropes, 2	4	15	Parrel	25	1		
Racking and Seizing	1	20					
Clew-lines, 2	4	108	Sin. Str. Bo.	14	4		
			Single	14	2		
Strapping	4	8½					
Bunt-lines, 2	3	78	Single	11	6		
Strapping	3	4					
Leech-lines, 2	2½	36	Single	10	2		
Strapping	2½	1					
Bowlines, 2	4½	70	Single	15	2		2
Bridles, 4	4½	18					4
Strapping	4½	2½					
Seizing	¾	6					
Frapping and Laſhing	2	12					
Reeftackle Pendants, 2	4	50	Double	9	4	2	2
Falls, 2	2½	84					
Strapping	3	3					
Earings, 10	1½	45					
Sheets, 2	8½	60	Sin. Shoul.	26	2		
			½ Double	26	2		
Straps for Sheet Blocks, 2	8½	5	Thick & thin				
Quarter Blocks, 2	6	10					
Laſhers for Quart. Blocks, 2	2½	10					
Seizings, 2	1½	16					
Span worn	3½	12					
Stoppers, 2	6½	5					
Slings, 1 Pair	5	14					
Stayſail Hallyard	3½	48	Single	13	1		
Strapping	4	1					
Sheets, 2	3	58	Single	11	2		
Strapping	3	2					
Pendant	4	4	Single	12	2		
Tack	3	5					
Downhaller	2½	28	Single	9	2		
Strapping	2½	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2	2	42	Single	7	2		2
Middle Stayſail Stay	4	22	Single	13	1		
Tackle	2	24	Double	8	1		
			Single	8	1		
Hallyard	3½	46	Single	12	1		
Sheets, 2	3½	42		12	2		
Tack	3	5					
Downhaller	2½	30	Single	9	2		
Strapping	3	6					
	2	2					
Tricing-line	2½	18	Single	9	1		
Studdingſail Hallyards, 2 Pair	3½	108	Single	12	6		
Sheets, 2 Pair	3	54	Single	12	2		
Tacks, 2 Pair	3½	74	Single	12	4		
Downhallers, No. 2	2	68	Single	9	2		6
Boom Tackles, 2 No.	2	84	Double	8	2		
			Single	8	4		
Laſh. for Booms worn	2½	20					
Tailing and Strapping	3½	18					
	2½	6					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair	4	87					12
Lanyards, 6	2	12					
Standing Backſtays, 2 Pair	4	104	Dead Eyes	7	4		
Lanyards, 4	2	20					
Stay cabled 4 Strands	4½	23½	Single	13	1		
Strapping	3½	1					
Flagſtaff Stay	2	26					1
Hallyards, 1 Pair	1½	76					
Tye	4	19					
Hallyard	2	38	Double	8	1		
			Single	8	2		
Strapping	2½	1½					
Horſes, 2	3	10					
Braces, 2	2	80	Single	8	2		
Pendants, 2	3	10	Single	8	2		
Strapping	2	3					
Lifts ſingle, 2	2½	64	Single	8	2		2
Strapping	2½	1½					
Parrel Ropes, 2	2	5	Parrel	12	1		
Clewlines, 2	2	82	Single	7	6		
Strapping	2	4					
Bowlines, 2	2	76	Single	7	2		2
Bridles, 4	2	8					
Strapping	2	1					
Earings, 4		2	Tarr'd Lines				
Shifting Backſtays, 1 Pair	4	52					2
Tackles, 2 No.	2	20	Double	7	2	2	2
			Single	7	2	2	2
Strapping	2½	1½					
Stayſail Stay	3	38	Single	10	1		
Hallyard	2½	52	Single	9	1		
Sheets, 2	2½	50	Single	9	2		
Tack	2	7					
Downhaller	2	34	Single	7	2		
Strapping	2½	1½					
	2	1					

74 Gun Ship. 1799 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	2	82	Single	7	6		
Sheets, 2 Pair	2	46					
Tacks, 2 Pair	2	54	Single	7	4		
Downhallers, 2	1½	46					2
Strapping	2	8					
MIZEN-MAST.							
Woolding	2¾	162					
Girdlines, 2	3½	68	Single	12	2		
Strapping	3½	1½					
Seizing	2	6					
Laſhings, 2	1½	8					
Burton Pendants, 1 Pair	5	8					2
Falls, 2	3	76	Double	11	2	2	2
			Single	11	2	2	2
Strapping	3½	4					
Shrouds, fine, 5 Pair	7	123	Dead Eyes	11	12		
Seizings Eye, 5	1	24					
Throat, 10	1	22					
End, 10	¾	36					
Lanyards, fine, 10	3½	72					
Ratling	1	200					
Stay Cabled 4 Strands, fine	8½	14½					2
Seizings, 3	1	8					
Lanyard, fine	3½	6					
Collar, fine	7	3½					1
Seizing	1	3					
Laſhing	1½	3					
Crowfoot for the Top	1	76	Euphro	24	1		2
Tackle	1½	5					
Strapping	2	1					
Jeers, 1 Pair	5½	54	Treble Co.	22	1		
			Double Co.	22	1		
Strapping	6	8					
Seizing	1½	10					
Laſhing at the Maſt Head	3	12					
Yard	2½	6					
Derrick	4½	40	Double	15	1		
Span	4½	4	Single				
Strapping	4½	2½					
Seizing	1	12					
Laſhing	2	8					
Vang Pendants, 2	4½	14	Double	9	2		
Falls, 2	2½	44	Single	9	2	2	2
Strapping	3	1					
Bowlines, 2	3	26	Single	10	4		2
Strapping	3	3					
Truſs Pendant	5	6					2
Fall	2½	20	Long Tack.	18	1	1	1
			Single	9	1	1	1
Strapping	3	3					
Seizing	¾	8					
Brails Peek Legs, 2 Pr.	2	12					
Falls	2	18	Single	7	6		
Middle	2½	24	Single	8	2		
Throat	3	26	Single	10	2		
Middle	2½	24	Single	9	2		
Foot	2½	21	Single	9	2		2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MIZEN-MAST CONTINUED.							
Brails Strapping	3	1					
	2½	9					
Lacing Mizen to Yard	1½	30					
Maſt worn	3	20					
Earings, 2	2	10					
Peek Hallyards, 1 Pair	2	26	Single	7	1		1
Sheet	4½	32	Double	15	1		1
			Single	15	1		1
Strapping	4½	3½					
Seizing	1	7					
Tack	3	5					
Slings, 1 Pair	6	6					
Stayſail Stay worn	5	16					2
Collar	4½	3½					1
Seizing	2½	3					
Laſhing	1	3					
Lanyard	2	6					
Hallyard	3	34	Single	10	3		
Sheets, 2	3½	15	Single	11	2		1
Tack	2½	4					
Downhaller	2	15	Single	7	2		
Strapping	3½	3					
	2	2					
Brails, 2	2	30	Single	7	2		2
Driver Hallyards, 2 Pair	3½	44	Single	12	4	1	2
Sheets, 2	3	20	Single	12	2		
Tacks, 2	3	30	Single	12	2		
Downhaller	2	24	Single	9	1		
Strapping	3	7					
Laſhing	4	14					
CROSS-JACK-YARD.							
Span about the Cap	4	2					
Braces, 2	2½	62	Single	9	2		
Pendants, 2	3½	6	Single	9	2		
Preventer, 2	3	7					
Strapping	2½	2					
Lifts Running, 2	2½	60	Single	9	4		
Strapping	2½	3					
Slings, 1 Pair	5	6½	Sin.do.Scord	16	1		
Strapping	4	2					
Seizing	1	3½					
Laſhing	1½	5					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	4½	56	Dead Eyes	8	8		
Seizings, 6		3	Tarr'dLines				
Lanyards, fine, 2	2½	32					
Ratling	1	70					
Standing Backſtays, fine, 1 Pair	4½	65	Dead Eyes	8	4		
Seizings, 4		1	Tarr'dLine				
Lanyards, fine, 2	2½	16					
Stay cabled, 4 Strands, fine	5	14					
Lanyard, fine	2	6					2
Collar	4	3	Single	14	1		
Seizing and Laſhing	1	6					
Flag-ſtaff Stay	2	14					1
Hallyards, 1 Pair	1½	46					
Shifting Backſtays, fine, 1 No.	4½	16					1

74 Gun Ship. 1799 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backſtay Tackle	2½	12	Double	9	1	1	1
			Single	9	1	1	1
Strapping	3	4					
Futtock Shrouds, fine, 3 Pr.	4½	18	Plates with Dead Eyes	8	8	8	8
Seizings, 6		2	Tar'd-Lines				
Ratling	1	20					
Top Rope Pendants, fine, 2	5½	18	Single I. bo.	16	1		1
Falls, 2	3	46	Double D°	12	2		
Tye	4	17	Sin. do. Scord	13	1		
			Double thin	12	1		
Hallyard	2	54	Single thin	12	1	1	1
Strapping	3½	4					
Laſhing	1	3					
Horſes, 2	3	9½					
Stirrups, 4	2½	4					4
Braces, 2	2½	52	Single	9	2		
Pendants, 2	3	4½	Single	9	2		
Strapping	2½	1½					
Lifts, 2	2½	56	Double	9	2		
			Single	9	2		
Strapping	3	3					
Parrel Ropes, 2	2½	6	Parrel	16	1		
Clew-lines, 2	2½	66	Strap bound	9	4		
			Single	9	2		
Strapping	2½	4					
Buntline	2	52	Single	8	4		
Strapping	2	1					
Leechlines, 2	2	18	Single	7	2		
Strapping	2	1					
Bow-lines, 2	2½	46	Single	9	2		2
Bridles, 4	2½	8					2
Strapping	2½	1					
Reef Tackle Pendants, 2	3	35					
Falls, 2	1½	42	Double	7	2		
			Single	7	2		
Strapping	2	1					
Earings, 8	1½	30					
Sheets, 2	5	42	Sin. Should.	15	2		
			Single	15	1		
Strapping	5	2					
	4	3					
Seizing	¾	14					
Laſhing	1½	5					
Stayſail Hallyard	2½	29	Single	9	1		
Sheets, 2	2½	30	Single	9	2		
Tacks, 2	2	2					
Downhaller	1½	20	Single	6	1		
Strapping	2½	2					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	2½	40					8
Lanyards, 4	1½	12					
Backſtays, 1 Pair	2½	39					4
Lanyards, 2	1½	6					
Stay	3	14					1
Lanyard	1½	3½					
Tye	3	7					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1½	31	Single	5	2		
Horſes, 2	2	6					
Braces, 2	1½	44	Single	5	2		
Lifts, ſingle, 2	2	32					
Parrel Ropes, 2	1½	4	Parrel	7	1		2
Clew-lines, 2	1½	50	Single	5	2		
Bow-lines, 2	1½	52					
Bridles, 4	1½	3					4
Earings, 2		1½	Tarr'd-Line				
Strapping	2	3					
NECESSARY ROPES.							
Viol Cabled	13½	45	Single Coak.	56	1		
Strapping	11½	10					
Seizing	2	12					
Laſhing	4½	10					
Winding Tackle Pendant	12	13	Co. Fourfold	22	1		
Fall	4½	78	Treble	22	1		
			Single	22	1		
Strapping	7	18					
Seizing	1½	20					
Catt Falls, 2	5½	108	Treble I. bo.	25	2		
			Braſs Shiv.				
Lanyards, 2	3	28	Single	10	2		4
Stoppers 2 No.	5	6					
Guy's Maſt-Head, 2	8½	30					
Fore, 2	8½	20					
After, 2	5½	24					
Fiſh Tackle Pendant	10	13	Single Coaked	28	1	Fiſh 1	1
Fall	4½	50	Long Tack.	38	2		
Strapping	7	6					
	6½	5					
Seizing	1½	10					
	1	10					
Lanyard	3	16					
Anchor Stock Tacklefall	3	20	Double	12	1	1	1
			Single	12	1	1	1
Bill Pendant	5½	12				1	2
Strapping	4	2					
Seizing	¾	9					
Stoppers Sheet Anchor, 2	8½	10					
Beſt Bower, 2	8½	10					
Small Bower, 2	8½	10					
Spare, 2	8½	10					
Seizings	1	36					
Wing cabled, 2 No.	8½	20					
Dog, 2 No.	8	20					
Seizing	1	36					
Stream Anchor, 2	5	7					
Kedge, 2	4	6					
Deck & Bit, cabled, 10 No.	11	36					14
Lanyards, 10 No.	3½	50					
Seizing	2	49					
	1	49					

74 Gun Ship. 1799 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	9½	18					
Ditto — — — —	9	18					
Ditto — — —	8	20					
Ditto — — —	7½	8					
Ditto — — — —	7	8					
Ditto — — — —	6½	12					
Ditto — — —	5½	12					
Ditto — — — —	5	12					
Ditto — — —	4½	6					
Shank painters Sh. Anchor cab.	8½	11½					
Best Bower, 2 —	8	8				1	
Small Bower, 2 —	8	8				1	
Spare, Cabled, 2 —	8½	11½					
Seizing —	1	18					
Ropes Buoy Sheet Anchor cabled	8	24					
Best Bower Cabled —	8	24					
Small Bower Cabled —	8	24					
Seizing —	1	18					
Stream Anch. Cabled —	5	30					
Kedge Cabled — —	4	30					
Davit, 2 — — — worn	3½	12					
Bell — — — —	3	3				1	
Buckets — — —		1	Coil Lashing				
Swab, 2 — worn	3½	30	Single	12	2		
Entering, 6 — —	3½	30					
Passing — — —	5	60				2	
Lanyard — —	2½	12					
Slip — — — —	3½	40					
Quarters, Poop and Stanchion in the Waste, — —	3½	150				16	
Fore, Main & Mizen Tops		1	Coil Lashing				
Wheel or Tiller White —	4½	30	Single	14	2	2	
Strapping — —	4½	1½					
Seizing — —	1	6					
Puddening of Anchors, worn	4	130	Old Canvas.	yd			
	3	40		20			
Seizings, 4	1½	96					
Slings Buoy, 4 Pair — —	4	56				6	
Lanyards, 3 — worn	3	15					
Seizings, 6 —	1	42					
Gun — — —	8	7					
Nut — — —	7	4					
But, 4 Pair — —	5	20				4	
Hogshead, 4 Pair — —	4	16				4	
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys — worn	4	6					
Swabs — worn	3½	24					
Cable Bends, 6 — —	3	64					
Rudder Pendants, cabled, 2 —	7½	11				4	
Lanyards, 2 —	2½	10					
Falls, 2 — — —	3½	50	Long Tackle Single	28	2	2	2
				15	2	2	2
Strapping — —	4½	5					
Seizing — —	¾	12					
Stern Ladders, 4 Strands, 2 worn	6	28					
Middle Rope, 2 worn	2	22					
Lashing — worn	2	12					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 — —	8	7					
	5	2					
Swifters for Capston-Bars —	2	60					
Lashing-Cables between Decks							
Sheep-Pens, Steep-Tubs,		5	Coils Lashing				
Tubs in the Tops, & Booms							
Nettings for the Quart. Waste,							
Tops, and Barricadoes —	1½	950					
Hallyard for Top Lanthorn —	1	32	Single	5	1		
Ensigns — —	2	36					
Jacks — —	1	12					
For Colours: Head Line —		4	White-lines				
For Colours: Rope Bands		6 lb	Marlines				
For Colours: Pendant Slings —	¾	30					
Awnings Ridge and Side Rope	3½	130	Single	12	3		
Stops — — —	1	40					
				34	1		
Crowfeet — —	1	160	Euphro	24	1		
				22	1		
Hallyard — —	1½	40					
Ridge Tackle Fall —	2½	10	Double	9	1		
			Single	9	1		
For different Uses of the Ship			Snatch-Iron	24	4	4	4
			Bo. Hooks	16	4	4	4
			Coaked	14	4	4	4
Strapping — —	4½	8					
Seizing — —	¾	30					
LONGBOAT.							
Burton Pendants, 1 Pair — —	4	3½	Single	11	2		2
Runner — — —	3	12					
Falls, 2 — —	2½	20	Double	9	2	2	2
			Single	9	2	2	2
Strapping — —	3	3					
Shrouds, 2 Pair — —	4	22	Dead Eyes	5	4		
Lanyards, 4 — —	1½	8					
Stay — — — —	4½	7	Dead Eyes	5	1		
Lanyard — —	1½	2½					
Tye — — —	3	7	Single	9	1		
Main Hallyard —	2	18	Single	7	2		
			Doub. I. bo.	7	1		
Outer Hallyard —	2	20	Single	7	1		1
			Double	8	1		
Sheet — — —	2	15	Single	8	1		1
Wood Hoops, 12		12					
Downhaller — —	1½	15	Single	5	1		
Strapping — —	2	8					
Topping Lift — —	2½	15					
Fore Hallyard — —	2	16	Single	7	1		
Sheet — — —	2	5					2
Tack — — —	1	1					
Bowline — —	2½	1½					1
Jib Hallyards — —	2	22	Single	7	2	1	1
Sheet — — —	2½	10					2
Outhaller — —	3	10	Iron Trave		1		
Innhaller — —	1	7					
Boat-Rope, cabled — —	9	40					
Lanyard — —	2½	4					

74 Gun Ship. 1799 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	5	40					
Grapnel-Rope, cabled — —	4½	50					
Painter — — — —	4	7					
Sternfaſt — — worn	3½	12					
Fenders, cabled, 6 — worn	6	14					
Lanyards, 6 — —	2	12					
Rudder Lanyards, 2 — —	2	2½					
PINNACE.							
Hallyards Main and Fore, 2 —	1¼	20					
Sheets, 4 — — —	1	20					
Grapnel-Rope, cabled — —	3	70					
Painter — — —	3	10					4
Sternfaſt — — worn	2½	10					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5½	10				8	12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					
YAWL or CUTTER.							
Hallyards *(if Cutters)* 2 Pair —	2	12	Iron Trave		2		
Sheets, 4 — — —	2	8					
	1¼	8					
Grapnel-Rope, cabled —	3	80					
Painter — — —	3	10					4
Slings, 2 Pair — —	5½	10				8	12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 31, Article 2, by Gammonings, 2 —| 8 | 155 | is meant, Two Gammonings are neceſſary, made of Rope 8 Inches in Circumference, containing in the Whole 160 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
A SHIP OF 64 GUNS,
Being of 1369 Tons Burthen.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	3	130					
Gammonings, 2	7	130					
Shrouds fine, 1 Pair	7½	32	Hearts	13	4	4	4
Collars fine, 2	6	11	Hearts	13	4		
Seizings, 2	1	16					
Laſhings, 2	2	12					
Lanyards fine, 2	3	20					
Bobſtays cabled fine 2 Pair	8	32	Hearts	13	3		
Collars fine 2	8	8	Hearts	13	3		
Seizings, 2	1½	30					
Laſhings, 2	2	9					
Lanyards fine, 2	3½	18					
Horſes, 2	4	18				6	
Straps, 2	3	3				4	
Lanyards, 2	2	8					
SPRITSAIL.							
Horſes, 2	3½	11					
Stirrups, 6	5	5½				6	
Braces, 2	3	70	Double	11	4		
Pendants, 2	3½	5	Single	11	4		
Strapping	3½	10					
Lifts, 2	3	48	Single	11	4		
Beckets, 2	3	3½					
Strapping	3¼	4					
Seizing	¾	9					
Standing, 2	4	8				4	
Straps, 2	4	4					
Lanyards, 2	1½	6					
Hallyard	3	34	Long Tackle	22	1	1	1
			Single	11	1		
Strapping	4	2½					
Seizing and Laſhing	¾	6					
Slings, 1 Pair	5	5½					
Seizing and Racking	1½	10					
Clew-Lines, 2	2½	40	Strap bound	9	4		
			Single	9	2		
Strapping	3	5					
Buntlines, 2	2	30	Single	8	2		
Strapping	2¼	1					
Earings, 4	1½	12					
Sheets cabled ſingle, 2	4½	35					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
JIBB.							
Horſes, 1	3½	18					
Seizings, 2	¼		of a Tar'Line				
Guy Pendants, 1 Pair	4	28	Single	13	2		
Falls, 2	2½	28	Single	9	4		
Strapping	4	1½					
	2½	2					
Laſhers, 4	1	14					
Out-Haller	3½	10					
Tackle-Fall	2	26	Single	8	2		
Strapping	2	1					
Stay	4	28	Single	13	1		
Strapping	4	1					
Tacklefall	2½	24	Double	9	1		
			Single	9	1		
Strapping	2¼	1					
Hallyard	3	40	Single	12	1		
Strapping	3	1					
Downhaller	2½	36	Single	9	1		
Sheets ſingle, 2	3	44	Single	11	2		
Pendants, 1 Pair	4	11	Single	11	2		
SPRITSAIL TOPSAIL.							
Horſes, 2	2¼	8					
Braces, 2	2¼	50	Single	9	2		
Strapping	2¼	1					
Lifts ſingle, 2	2	38	Single	8	2		
Strapping	2	2					
Hallyard	2½	26	Single	9	2		
Strapping	2¼	2½					
Laſhing	¼	6					
Parrel-Ropes, 2	2	4	Parrel	12	1		
Clewlines, 2	2	43	Single	7	4		
Strapping	2	2					
Lacing and Earings, 2	1	36					
FORE-MAST.							
Woolding	3	240					
Girdlines, 2	4	68	Single	15	2		
Strapping	4	2					
Seizing	¼	6					
Laſhings, 2	2	17					

64 Gun Ship. 1369 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 2 Pr.	10½	17	Sin. Coaked	22	2		8
Strapping — —	6½	3½					
Seizing — —	1½	8	Double				
Runners of Tackles, 4 —	6½	32	Thin Coak	21	4		
Strapping — —	5½	6					
Falls of Tackles, 4 — —	4	184	Single	24	4	4	4
			Thin Coak	14	4	2	2
Strapping —	5½	10					
Seizing — —	1	45					
Shrouds cabled fine, 7 Pair —	10½	179	Dead Eyes	16	18		
Seizings Eye, 6 — —	1½	45					
Throat, 14 — —	1½	87½					
End, 14 — —	1½	87½					
Lanyards fine, 14 — —	5	108					
Rathing — — —	1½	300					
Stay cabled fine 4 Strands —	16	13	Heart	22	1		
Seizings, 3 — —	1½	23					
Lanyard fine — —	5	16					
Collar cab. 4 Str. fine doub.	8½	8	Heart	22	1		
Seizings, 2 — —	1½	12					
Lashing — —	2½	6					
Preventer Stay cabled 4 Str. fine	10½	13	Heart	15	1		
Lanyard fine —	4	9					
Coll. cab. 4 Str. fine double —	5½	6½	Heart	15	1		
Lashing —	2	6					
Seizings, 2 —	1½	18					
Catharpin Legs, 4 —	6½	13½					
Seizings, 8 —	1½	60					
Crowfoot for the Top —	1½	120	Euphro	24	1		2
Tackle — —	2	10					
Strapping	2	1½					
Jeers Tye — — —	6½	112	Treb. Coak.	24	2		
Falls, 2 — —			Doub. Coak.	24	2		
Strapping — — —	8	22					
Seizing — — —	2	30					
Lashing at the Maſt Head —	4	36					
Yard — —	3	12					
Stoppers, 2 — —	5½	6					
Horſes, 2 — — — —	5	14½					2
Stirrups, 6 — — —	4	14					8
Seizings, 4 — — —	¾	16					
Lanyard 1 — — —	2	5					
Yard Tackle Pendants, 2 —	6½	8½	Do. thin Co.	16	2		
			Dou. thin Co.	18	2	2	2
Falls, 2 — —	3½	92	Single	13	2		
Strapping — —	5	8½					
Seizing — —	1	16					
Inner Tric. Lines, 2	2	38	Single	7	2		
Outer Tric. Lines, 2	2	38	Single	7	4		
Strapping — —	2	6					
Braces, 2 — — —	4	94	Single Coak.	15	4		
Pendants, 2 — — —	5	10	Single Coak.	15	2		
Preventer, 2 — —	4	11					
Strapping — — —	4½	4½					
Seizing — — —	¾	16					
Lashing — — —	1½	24					
Preventers *(in War only)* 2	3½	84	Single	13	4		

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
FORE-MAST CONTINUED.							
Braces Preventer Strapping —	3¼	3					
Seizing — —	¾	10					
Lifts, 2 — — — —	4	102	Single	15	6		
Span for the Cap — —	5½	8					
Short Span — — —	4	2½					
Strapping — — —	4¼	5					
Seizing — — —	¾	15					
Jigger Tackle, No. 2 —	2½	30	Double	9	2		
			Single	9	2		
Strapping —	3¼	4					
Truſs Pendants, 2 — — —	7½	14					4
Falls, 2 — — —	3	50	Double	11	4	4	4
Strapping — —	3¼	4					
Eye Seizings, 2 —	1½	12					
Nave Line — —	2	17	Single	7	1		
Puddening the Yard — worn	6	11					
Clew-garnets, 2 — — —	3½	64	Sin. Strapbo.	13	4		
			Single	13	2		
Straps ab. the Yard	3¼	7					
Strapping — —	3¼	1½					
Seizing — —	¾	18					
Lashing — —	1	12					
Buntline Legs, 4 — — —	3	47	Double	10	4		
Falls, 2 — — —	3	47	Single	10	8		
Strapping — — —	3¼	10					
Leechline Legs, 2 — — —	2¼	48	Double	10	4		
Falls, 2 — — — —	2¼	48	Single	10	8		
Strapping — — —	3	10					
Slablines, 2 — — —	2	38	Single	8	2		
Strapping — — —	2	1					
Bowlines, 2 — — — —	4	56	Single	15	4		2
Bridles, 2 — — —	4	5					
Strapping — — —	4	4					
Seizing — — —	¼	10					
Lashing — — —	2	10					
Earings, 6 — — — —	2	28					
Sheets Cabled, 2 — — —	6	77	Sin. Coaked	22	2		2
Strapping — — —	6	4					
Seizing — — —	1	14					
Stoppers, 2 — — —	5	4					
Tacks Taper and Cabled, 2 —	8	42	Shouldered	20	2		
Strapping — — —	6	5½					
Seizing — — —	1½	8					
Stoppers, 2 — — —	5½	5				2	2
Lanyards, 2 —	2	5					
Gammoning the Bumkin, worn —	4	14				2	6
Lanyards, 2 — — —	2	10					
Lany. for Pudden & Dolphin —	1½	8					4
Slings, 1 Pair — — —	11	8½					1
Strap — — —	11	3½					
Seizings, 2 — — —	1½	18					
Lanyard — — —	3	6½					
Stayſail Hallyard — —	3½	28	Single	12	2		
Sheets, 2 — — —	4	26	Single	12	2		
Tack — — —	3	2					
Downhaller — —	2	26	Single	8	1		
Strapping — —	4	4					
	2½	1					

64 Gun Ship. 1369 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Studd. Sail Hallyard, Inner, 2 Pr.	3	46	Single	11	6		
Outer, 2 Pr. —	3½	80	Single	11	4		
Sheets, 2 Pr. — — —	3	15					
Tacks, 2 Pr. — — —	3½	64	Single	11	2		
Strapping — — —	3½	16					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair —	5	6½					2
Falls, 2 — — —	2½	54	Double	10	2	2	2
			Single	10	2	2	2
Strapping — — —	3½	4					
Shrouds fine 4 Pr. — —	6½	98	Dead Eyes	10	12		
Seizings Eye, 4 — —	1	24					
Throat, 8 — —	1	42					
End, 8 — — —	¾	36					
Lanyards fine, 8 — —	3½	60					
Ratling — — — —	1	135					
Standing Backstays fine 3 Pr. —	6½	102	Dead Eyes	10	4		
Seizings Eye, 3 —	1	12					
Throat, 6 —	1	21					
End, 6 —	¾	18					
Lanyards fine, 6	3½	20					
Breast Backstay Runners, 2 —	4	8	Single	12	2		
Falls, 2 — —	2½	18	Double	10	4		
Strapping — —	3	3					
Stay Cabled 4 Strands fine —	7½	21					
Collar fine — —	6	3½	Single	18	1		
Tackle — — —	3	20	Long Tackle	20	1		
			Single	12	1		
Strapping — —	4	3					
Seizing — — —	1½	6					
	¾	6					
Preventer Stay cab. 4 Str. fine —	5½	21					
Collar, fine — —	5	3	Single	15	1		
Tackle — —	2½	18	Long Tackle	18	1		
			Single	10	1		
Strapping — — —	3½	3					
Seizing — — —	1	8					
Lashing the Col.	2½	6					
Shifting Backstays, fine, 1 Pair —	6½	34					2
Tackles 4 No. — —	3	40	Double	12	4	4	4
			Single	12	4	4	4
Strapping — — —	4	8					
Futtock Shrouds, fine, 4 Pair —	6½	36	Plates with Dead Eyes	10	12	12	12
Seizing Upper, 8 —	1	46					
Lower, 8 —	¾	40					
Ratling — —	1½	46					
Top Rope Pendants, fine, 2 —	8½	37	S. Brass Shiv.	22	2		2
			Iron Bound				
Falls, 2 — — —	4	130	Treb. Ir. Bo.	21	4		
			Coaked				
Tye — — — —	5½	40	Flat Side	18	2		
			Doub. Coak.	18	1		
Strapping — — —	5½	8					
Seizing — — — —	1	12					
Lashers at the Mast Head, 2	2½	12					
Yard — — —	2	5					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2 — — —	3½	116	Do. thin Co.	24	2		
			Sin. Ditto	24	2	2	2
Strapping — — —	4¼	8					
Seizing — — — —	¼	16					
Horses, 2 — — —	4	11					
Stirrups, 6 — —	3	8					6
Braces, 2 — — —	3½	94	Single	12	4		
Pendants, 2 — —	4½	9	Single	12	2		
Preventer, 2 —	3½	10					
Strapping — —	4	5					
Lifts, 2 — — — —	3½	64	Double	12	2		
			Single	12	4		
Beckets, 2 — —	3½	3					
Strapping — —	4	7					
Seizing — —	¾	18					
Parrel Ropes, 2 — —	3½	12	Parrel	22	1		
Racking and Seizing —	½	16					
Clewlines, 2 — — — —	3½	82	Sin. Str. bo.	12	4		
			Single	12	2		
Strapping — —	3½	18					
Buntlines, 2 — — —	3	64	Single	10	4		
Strapping — —	3	3					
Leechlines, 2 — —	2½	30	Single	9	2		
Strapping — —	2½	1					
Bowlines, 2 — —	3	60	Single	11	2		2
Bridles, 4 — — —	3	3					
Strapping — —	3	2					
Lashing — —	1	12					
Reeftackle Pendants, 2 —	3½	40	Double	8	4	2	2
Falls, 2 — — —	2	56					
Strapping — —	2½	2½					
Earings, 10 — — —	1½	40					
Sheets, 2 — — — —	7	52	Sin. Shoul.	24	2		
			¼ do. th & thin	24	2		
Straps for Sheet Blocks, 2	7½	5	Coaked				
Quarter Blocks, 2 —	5½	8					
Lashers for Quarter Blocks, 2	2	10					
Seizings, 2 — — —	1½	24					
Span — — — worn	3	9					
Stoppers, 2 — —	5½	4					
Slings, 1 Pair — —	5	11					
Stayfail Stay — —	4	22	Single	13	1		
Tackle — —	2	15	Double	9	1		
			Single	8	1		
Hallyard — —	3½	38	Single	12	1		
Strapping — —	3½	1½					
Sheets, 2 — —	3½	32	Single	12	2		
Strapping — —	3½	1½					
Outhaller — —	2½	19	Single	9	1		
Downhaller — —	2	28	Single	8	1		
Strapping — —	2	2					
Studdingsail Hallyards, 2 Pair —	3½	92	Single	12	6		
Sheets, 2 Pair —	3	46	Single	12	2		
Tacks, 2 Pair —	3½	68	Single	12	2		
Downhallers, 2 —	2	58	Single	8	2		6
Boom Tackles, 2 —	2	80	Double	8	2		
			Single	8	4		
Tails and Straps, 2 —	3½	18					
	2½	6					

64 Gun Ship. 1369 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — — —	3½	69					12
Lanyards, 6 — — —	1¼	12					
Standing Backſtays, 2 Pair —	3½	82	Dead Eyes	6	4		
Lanyards, 4 — — —	1¼	20					
Stay cabled 4 Strands — —	4	27	Single	12	1		
Strapping — — —	3	1					
Tackle — — —	2	14	Double	7	1		
			Single	7	1		
Strapping — — —	2½	1½					
Flagſtaff Stay — — —	2	17					1
Hallyards, 1 Pair — —	1¾	56					
Tye — — — — —	3½	15½					
Hallyard — —	2	28	Double	8	1		
			Single	8	2		
Strapping — — —	2½	1½					
Horſes, 2 — — — —	3	7½					
Braces, 2 — — — — —	2	99	Single	7	6		
Pendants, 2 — — —	2½	10	Single	7	2		
Strapping — — —	2	4					
Lifts ſingle, 2 — — — —	2	54	Single	7	2		2
Strapping — — —	2½	1½					
Parrel Ropes, 2 — — —	2	4½	Parrel	11	1		
Clewlines, 2 — — —	2	68	Single	7	6		
Strapping — — —	2	3					
Bowlines, 2 — — — —	2	68	Single	7	2		4
Bridles, 2 — — —	2	4½					2
Strapping — — —	2	2					
Earings, 2 No. — — — —		2	Tarr'd Lines				
Shifting Backſtays, 1 Pair —	3½	40					2
Tackles, 2 No. —	2	14	Double	7	2	2	2
			Single	7	2	2	2
Strapping — —	2	1½					
Studdingſail Hallyards, 2 Pair —	2	74	Single	7	6		
Sheets, 1 Pair — —	2	20					
Tacks, 2 Pair — —	2	48	Single	7	4		
Downhallers, 2 No. — —	1½	20					1
Strapping — — —	2	8					
MAIN-MAST.							
Woolding — — —	3	330					
Girdlines, 2 — — —	4	75	Single	15	2		
Strapping — — —	4	2					
Seizing — — —	¾	6					
Laſhings, 2 — — —	2	17					
Pendants of Tack. cab. fine, 2 Pr.	10½	18	Sin. Coak.	22	2		8
Strapping —	6½	3½					
Seizing —	1½	8					
Runners of Tackles, 4 — —	6½	36	Do. thin Co.	21	4		
Strapping —	6	6					
Falls of Tackles, 4 — — —	4	192	Sin. thin Co.	24	4	4	4
Strapping — —	5½	10					
Seizing — —	1	40					
Shrouds cabled, fine, 7 Pair —	10½	198	Dead Eyes	16	18		
Seizings Eye, 6 — —	1½	45					
Throat, 14 — —	1½	87½					
End 14 — — —	1½	87½					
Lanyards, fine, 14 — —	5	108					
Ratling — — — —	1½	330					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stay cabled 4 Strands, fine —	17½	20	Heart	22	1		
Seizings, 4 — — —	2	23					
Lanyard, fine — —	5	18					
Collar cabled 4 Strands, fine	12½	10	Heart	22	1		
Worming — —	2	54					
Seizings, 3 — —	2	20					
Laſhing — — worn	3½	18					
Preventer Stay cab. 4 Strands fine	12	18	Heart	16	1		
Lanyard, fine —	4	10					
Col. cab. 4 ſtr. fine. do.	6	5½	Heart	16	1		
Laſhing — —	2	8					
Seizings, 3 — —	1¾	18					
Catharpin Legs, 4 — — —	6½	14½					
Seizings, 8 — —	1½	60					
Stay Tackle Pendant — —	6	5	Do. thin Co.	17	1		
			S. thin Co.	18	1	1	2
Fall — — —	3½	44		14	1	1	1
Strapping — —	4	3½					
Seizing — —	¾	12					
Laſhing — —	1½	12					
			Do. thin Co.	16	1		
Fore-Stay Tackle Fall — —	3½	43	S. thin Co.	18	1	1	2
				14	1	1	1
Strapping —	4	3½					
Seizing —	¾	12					
Crowfoot for the Top — —	1½	130	Euphro	26	1		2
Tackle — — —	2	10					
Strapping — —	2	1½					
Jeers Tye — — —	7	130	Treb. Coak.	26	2		
Falls, 2 — — —			Doub. Coak.	26	2		
Strapping — — —	8	24					
Seizing — — — —	2	28					
Laſhers to the Maſt Head,	4	38					
Yard — —	3	12					
Stoppers, 2 — — —	6	6					
Horſes, 2 — — —	5	16					2
Stirrups, 6 — — —	4	15					8
Seizings, 4 — — —	¾	16					
Lanyard — — —	2	6					
Yard Tackle Pendants, 2 —	6½	9½	Do. thin Co.	16	2		
Falls, 2 — —	3½	98	S. thin Co.	18	2	2	2
			Single	13	2		
Strapping — —	5	8½					
Seizing — —	1	16					
Inner Tricing-Lines, 2	2	38	Single	7	2		
Outer Tricing-Lines, 2	2	38	Single	7	4		
Strapping — —	2	6					
Braces, 2 — — —	4	88	Sin. Coak.	15	2		
Pendants, 2 — —	5	10	Sin. Coak.	15	2		
Preventer, 2 — —	4	11					
Strapping — —	4½	4					
Seizing — — —	¾	10					
Preventers *(in War only)* 2	3½	82	Single	13	4		
Strapping — —	3½	3					
Seizing — — —	¾	10					
Lifts, 2 — — — —	4	112	Single	15	6		
Span for the Cap — —	6	8					
Short Span — —	4	2½					

64 Gun Ship. 1369 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — — —	4	5					
Seizing — — —	1	15					
Jigger Tackles, 2 —	2½	30	Double	10	2		
			Single	10	2		
Strapping — —	3½	4					
Truss Pendants, 2 — —	7	16					4
Falls, 2 — — —	3	58	Double	11	4	4	4
Strapping — —	3½	4					
Eye Seizings, 2 —	1½	12					
Nave-Line — — —	2	20	Single	7	1		
Puddening the Yard — worn	6	12					
Clewgarnets, 2 — — —	3½	74	Strapbound	13	4		
			Single	13	2		
Strap about the Yard —	3½	8					
Strapping — —	3	1½					
Seizing — — —	¾	18					
Lashing — — —	1	12					
Buntline Legs, 4 — —	3	48	Double	10	2		
Falls, 2 — — —	3	56	Single	10	10		
Strapping — —	3½	12					
Leechline Legs, 2 — —	2½	50	Double	10	4		
Falls, 2 — — —	2½	46	Single	10	10		
Strapping — —	3½	13					
Slablines, 2 — —	2	40	Single	8	2		
Strapping — —	2	1					
Bowlines, 2 — — —	4½	56	Double	16	1		4
Bridles, 4 — —	4½	15					2
Strapping — —	4½	4					
Seizing — — —	¾	4					
Lashing — — —	2	4					
Tackle — —	2½	15	Long Tackle	16	1	1	1
			Single	9	1	1	1
Strapping — —	3	3					
Earings, 6 — —	2	28					
Sheets, cabled, 2 — —	6½	82	Sin. Coak.	22	4		4
Strapping — —	6½	9					
Seizing — — —	1½	16					
Lashers, 2 — — —	2	6					
Stoppers, 2 — — —	3½	4					
Tacks Taper and Cabled, 2 —	8½	42					
Stoppers, 2 — — —	5½	4				2	2
Lanyards, 2 — —	2	5					
Lany. for the Pudden & Dolphin —	2	10					4
Slings, 1 Pair — — —	11	9½					1
Strap — — — —	11	3½					1
Seizing — — —	1½	18					
Lanyard — — —	3	6½					
Quarter Tackle Pendants, 2 —	6	9	Do. thin Co.	17	2		
Falls, 2 — —	3½	80	S. thin Co.	19	2	2	2
			———	14	2	2	2
Strapping — —	4½	8½					
Seizings, 3 — —	1	14					
Luff Tackles, 4 No. — —	3½	180	Double	13	6	6	6
			Single	13	6	6	6
Strapping — —	4	12					
Seizing — — —	¾	32					
Stayfail Stay — — — worn	4½	13					2
Collar — — —	3½	2					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayfail Collar Seizing — —	1	6					
Lanyard — —	1½	4					
Hallyard, 1 — — —	3	36	Single	10	3	1	1
Sheets, 2 — — —	4	14	Single	13	2	1	1
Tacks, 2 — — —	4	5					
Downhaller — — —	2	19	Single	8	1		
Strapping — — —	4	1½					
	3	2					
Studd. sail Hallyards, Inn. 2 Pr.	3	53	Single	12	6		
Outer, 2 Pr. —	3½	92	Single	12	4		
Sheets, 2 Pair — —	3	30					
Tacks, 2 Pair — —	3½	50	Single	12	2		
Strapping — — —	3½	16					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	5	7					2
Falls, 2 — — —	2½	54	Double	11	2	2	2
			Single	11	2	2	2
Strapping — — —	3½	4					
Shrouds, fine, 4 Pair — —	6½	106	Dead Eyes	10	12		
Seizings Eye, 4 — —	1	24					
Throat, 8 — —	1	42					
End, 8 — — —	¾	36					
Lanyards, fine, 8 — —	3½	60					
Ratling — — —	1	145					
Standing Backstays, fine, 3 Pr. —	6½	113	Dead Eyes	10	4		
Seizings Eye, 3 —	1	21					
Throat, 6 —	1	21					
End, 6 —	¾	18					
Lanyards, fine, 6	3½	20					
Breast Backstay Runners, 2 —	4	8	Single	12	2		
Falls, 2 — — —	2½	18	Double	10	4		
Strapping — —	3	3					
Stay Cabled 4 Strands, fine —	7½	22½					
Collar, fine — — —	6½	3½	Single	18	1		
Tackle — — —	3	22	Long Tackle	20	1		
			Single	12	1	1	1
Strapping — — —	4	3					
Seizing — — —	1½	6					
	¾	6					
Lashing — — —	2	6					
Preventer Stay, Cabled 4 str. fine	6	22					
Collar, fine —	5	3	Single	15	1		
Tackle — —	2½	18	Long Tackle	18	1		
			Single	10	1	1	1
Strapping —	3½	3					
Seizing — —	1	8					
Lashing the Col. —	1½	6					
Shifting Backstays, fine, 1 Pair —	6½	37					2
Tackles, 4 No. —	3	40	Double	12	4	4	4
			Single	12	4	4	4
Strapping — —	4	8					
Futtock Shrouds, fine, 4 Pair —	6½	38	Pla with D. E	10	12	12	12
Seizings Upper. 8 —	1	48					
Lower, 8 —	¾	42					
Ratling — —	1½	50					
Top Rope Pendants, fine, 2	8½	40	Sin. I. bound Brass Shiv.	22	2		2

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Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2	4	138	Treb. I. bo.	21	4		
Tye	5½	42	Flat Side	19	2		
			Double	19	1		
Strapping	5½	8					
Seizing	1	12					
Laſhers at the Maſt Head, 2	2½	12					
Yard	2	5					
Hallyards, 2	3½	130	Do. thin Co.	24	2		
			S. thin Co.	24	2	2	2
Strapping	4½	8					
Seizing	¾	16					
Horſes, 2	4	12					
Stirrups, 6	3	8½					6
Braces, 2	3½	77	Single	12	2		
Pendants, 2	4½	9	Single	12	2		
Preventers, 2	3½	10					
Span ab. the Mizen Maſt	4½	5					
Strapping	4	3					
Lifts, 2	3½	70	Double	12	2		
			Single	12	4		
Beckets, 2	3½	3					
Strapping	4	7					
Seizing	¾	18					
Parrel Ropes, 2	3½	12	Parrel	22	1		
Racking and Seizing	¾	16					
Clew-lines, 2	3½	94	Sin. Str. Bo.	12	4		
			Single	12	2		
Strapping	3½	8					
Bunt-lines, 2	3	67	Single	10	6		
Strapping	3	4					
Leech-lines, 2	2½	32	Single	9	2		
Strapping	2½	1					
Bowlines, 2	4	66	Single	14	2		2
Bridles, 4	4	16					4
Strapping	4	2½					
Seizing	¾	6					
Frapping and Laſhing	2	12					
Reeftackle Pendants, 2	3½	46	Double	9	4	2	2
Falls, 2	2	74					
Strapping	2½	2½					
Earings, 10	1½	45					
Sheets, 2	7½	57	Sin. Shoul.	24	2		
			¼ Double	24	2		
Straps for Sheet Blocks, 2	8	5	Thick & thin				
Quarter Blocks, 2	6	8					
Laſhers for Quart. Blocks, 2	2	10					
Seizings, 2	1	24					
Span worn	3	10					
Stoppers, 2	6	4					
Slings, 1 Pair	5	12					
Stayſail Hallyard	3½	42	Single	13	1		
Strapping	4	1					
Sheets, 2	3	54	Single	11	2		
Strapping	3	2					
Pendant	4	4	Single	12	2		
Tack	3	5					
Downhaller	2	24	Single	8	2		
Strapping	2	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2	2	40	Single	7	2		2
Middle Stayſail Stay	4	21	Single	12	1		
Tackle	2	20	Double	8	1		
			Single	8	1		
Hallyard	3½	39	Single	12	1		
Sheets, 2	3½	38		12	2		
Tack	3	5					
Downhaller	2	27	Single	8	2		
Strapping	3	6					
	2	2					
Tricing-line	2	16	Single	8	1		
Studdingſail Hallyards, 2 Pair	3½	98	Single	12	6		
Sheets, 2 Pair	3	48	Single	12	2		
Tacks, 2 Pair	3½	68	Single	12	4		
Downhallers, No. 2	2	62	Single	8	2		6
Boom Tackles, 2 No.	2	80	Double	8	2		
			Single	8	4		
Laſh. for Booms worn	2½	20					
Tailing and Strapping	3½	18					
	2½	6					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair	3½	76					12
Lanyards, 6	1½	12					
Standing Backſtays, 2 Pair	3	90	Dead Eyes	6	4		
Lanyards, 4	1½	20					
Stay cabled 4 Strands	4	22	Single	12	1		
Strapping	3	1					
Flagſtaff Stay	2	25					1
Hallyards, 1 Pair	1½	68					
Tye	3½	17					
Hallyard	2	34	Double	8	1		
			Single	8	2		
Strapping	2½	1½					
Horſes, 2	3	9					
Braces, 2	2	74	Single	7	2		
Pendants, 2	2	10	Single	7	2		
Strapping	2	3					
Lifts ſingle, 2	2	58	Single	7	2		2
Strapping	2½	1½					
Parrel Ropes, 2	2	4½	Parrel	12	1		
Clewlines, 2	2	74	Single	7	6		
Strapping	2	3					
Bowlines, 2	2	72	Single	7	2		2
Bridles, 4	2	7					2
Strapping	2	1					
Earings, 4	2	Tarr'd Lines					
Shifting Backſtays, 1 Pair	3½	44					2
Tackles, 2 No.	2	14	Double	7	2	2	2
			Single	7	2	2	2
Strapping	2½	1½					
Stayſail Stay	3	34	Single	10	1		
Hallyard	2½	46	Single	9	1		
Sheets, 2	2½	46	Single	9	2		
Tack	2	7					
Downhaller	2	30	Single	7	2		
Strapping	2½	1½					
	2	1					

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Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	2	78	Single	7	6		
Sheets, 2 Pair	2	42					
Tacks, 2 Pair	2	50	Single	7	4		
Downhallers, 2	1½	44					2
Strapping	2	8					
MIZEN-MAST.							
Woolding	2½	150					
Girdlines, 2	3	60	Single	12	2		
Strapping	3½	1½					
Seizing	⅝	6					
Laſhings, 2	1½	8					
Burton Pendants, 1 Pair	5	7					2
Falls, 2	3	72	Double	11	2	2	2
			Single	11	2	2	2
Strapping	3½	4					
Shrouds, fine, 5 Pair	6½	103	Dead Eyes	10	12		
Seizings Eye, 5	1	24					
Throat, 10	1	22					
End, 10	¾	36					
Lanyards, fine, 10	3½	60					
Ratling	1	160					
Stay Cabled 4 Strands, fine	7½	14					2
Seizings, 3	1	8					
Lanyard, fine	3½	6					
Collar, fine	6½	3½					1
Seizing	1	3					
Laſhing	1½	3					
Crowfoot for the Top	1	70	Euphro	20	1		2
Tackle	1½	5					
Strapping	2	1					
Jeers, 1 Pair	5	48	Treble Co.	18	1		
			Double Co.	18	1		
Strapping	5½	7					
Seizing	1½	10					
Laſhing at the Maſt Head	2½	12					
Yard	2	6					
Derrick	4	36	Double	14	1		
Span	4	4	Single	14	1		1
Strapping	4	2½					
Seizing	1	12					
Laſhing	2	8					
Vang Pendants, 2	4	12	Double	8	2		
Falls, 2	2	40	Single	8	2	2	2
Strapping	3	1					
Bowlines, 2	3	24	Single	10	4		2
Strapping	3	3					
Truſs Pendant	4	6					2
Fall	2½	20	Long Tack.	18	1	1	1
			Single	9	1	1	1
Strapping	3	3					
Seizing	¾	8					
Brails Peek Legs, 2 Pr.	2	12					
Falls	2	18	Single	7	6		
Middle	2½	23	Single	8	2		
Throat	3	25	Single	10	2		
Middle	2½	23	Single	9	2		
Foot	2½	21	Single	9	2		2

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MIZEN-MAST CONTINUED.							
Brails Strapping	3	1					
	2½	9					
Lacing Mizen to Yard	1½	28					
Maſt worn	3	20					
Earings, 2	2	10					
Peek Hallyards, 1 Pair	2	24	Single	7	1		1
Sheet	4	28	Double	14	1		1
			Single	14	1		1
Strapping	4	3½					
Seizing	1	7					
Tack	3	5					
Slings, 1 Pair	5½	6					
Stayſail Stay worn	4½	15					2
Collar	4	3½					1
Seizing	¼	3					
Laſhing	1	3					
Lanyard	2	6					
Hallyard	3	32	Single	11	3		
Sheets, 2	3½	15	Single	11	2		1
Tack	2½	4					
Downhaller	2	15	Single	7	2		
Strapping	3½	3					
	2½	2					
Brails, 2	2	28	Single	7	2		2
Driver Hallyards, 2 Pair	3	40	Single	10	4	1	2
Sheets, 2	3	19	Single	10	2		
Tacks, 2	3	28	Single	10	2		
Downhaller	2	23	Single	8	1		
Strapping	3	7					
Laſhing	¼	14					
CROSS-JACK-YARD.							
Span about the Cap	4	2					
Braces, 2	2½	60	Single	9	2		
Pendants, 2	3½	6	Single	9	2		
Preventer, 2	3	7					
Strapping	2½	2					
Lifts Running, 2	2½	52	Single	9	4		
Strapping	2½	3					
Slings, 1 Pair	4½	6	Sin. do. Scor.	14	1		
Strapping	4	2					
Seizing	1	3½					
Laſhing	1½	5					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	4	50	Dead Eyes	8	8		
Seizings, 6		3	Tarr'd Lines				
Lanyards, fine, 6	2½	32					
Ratling	1.	64					
Standing Backſtays, fine, 1 Pair	4	56	Dead Eyes	8	4		
Seizings, 4		1	Tarr'd Line				
Lanyards, fine, 2	2½	16					
Stay cabled, 4 Strands, fine	4½	13					
Lanyard, fine	2	6					2
Collar	3½	3	Single	13	1		
Seizing and Laſhing	1½	6					
Flag-ſtaff Stay	1½	13					1
Hallyards, 1 Pair	1½	42					
Shifting Backſtays, fine, 1 No.	4	14					1

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Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backstay Tackle	2	12	Double	8	1	1	1
			Single	8	1	1	1
Strapping	2½	4					
Futtock Shrouds, fine, 3 Pr.	4	16	Plates with Dead Eyes	8	8	8	8
Seizings, 6		2	Tar'd-Lines				
Ratling	1	18					
Top Rope Pendants, fine, 2	5	16	Single I. bo.	14	1		1
Falls, 2	3	42	Double D°	12	2		
Tye	3½	15	Sin. do. Scord	12	1		
Hallyard	2½	46	Double thin	12	1		
			Single thin	12	1	1	1
Strapping	3½	4					
Lashing	1	3					
Horses, 2	3	9					
Stirrups, 4	2½	4					4
Braces, 2	2½	49	Single	9	2		
Pendants, 2	3	4½	Single	9	2		
Strapping	2½	1½					
Lifts, 2	2½	51	Double	9	2		
			Single	9	2		
Strapping	3	3					
Parrel Ropes, 2	2½	5½	Parrel	14	1		
Clew-lines, 2	2½	62	Strap bound	9	4		
			Single	9	2		
Strapping	2½	4					
Buntline	2	44	Single	8	4		
Strapping	2	1					
Leechlines, 2	2	18	Single	7	2		
Strapping	2	1					
Bow-lines, 2	2	40	Single	8	2		2
Bridles, 4	2	8					2
Strapping	2	1					
Reef Tackle Pendants, 2	3	32					
Falls, 2	1½	38	Double	7	2		
			Single	7	2		
Strapping	2	1					
Earings, 8	1½	30					
Sheets, 2	4½	36	Sin. Should.	14	2		
			Double	14	1		
Strapping	5	2					
	4	3					
Seizing	¾	14					
Lashing	1½	5					
Stayfail Hallyard	2	26	Single	8	1		
Sheets, 2	2	28	Single	8	2		
Tacks, 2	2	2					
Downhaller	1½	18	Single	6	1		
Strapping	2	2					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	2½	36					8
Lanyards, 4	1½	12					
Backstays, 1 Pair	2½	33					4
Lanyards, 2	1½	6					
Stay	3	12					1
Lanyard	1½	3½					
Tye	2½	6					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1½	27	Single	5	2		
Horses, 2	2	6					
Braces, 2	1½	40	Single	5	2		
Lifts, single, 2	2	30					2
Parrel Ropes, 2	1½	4	Parrel	6	1		
Clew-lines, 2	1½	45	Single	5	2		
Bow-lines, 2	1½	44					
Bridles, 4	1½	3					
Earings, 2		1½	Tarr'd-Line				
Strapping	1½	3					
NECESSARY ROPES.							
Viol Cabled	13	42	Single Coak.	50	1		
Strapping	11	10					
Seizing	2	12					
Lashing	4	10					
Winding Tackle Pendant	12	12	Co. Fourfold	22	1		
Fall	4½	75	Treble	22	1		
			Single	22	1		
Strapping	7	18					
Seizing	1½	20					
Catt Falls, 2	5	100	Treble I. bo. Brass Shiv.	22	2		
Lanyards, 2	3	24	Single	10	2		4
Stoppers 2 No.	5	6					
Guy's Mast-Head, 2	8	29					
Fore, 2	8	19					
After, 2	5	21					
Fish Tackle Pendant	9	11½	Single Coaked	26	1	1	1
Fall	4	48	Long Tack.	36	2		
Strapping	6	6					
	5½	5					
Seizing	1½	10					
	1	10					
Lanyard	3	16					
Anchor Stock Tacklefall	3	30	Double	12	1	1	1
			Single	12	1	1	1
Bill Pendant	5	11				1	2
Strapping	4	2					
Seizing	¾	9					
Stoppers Sheet Anchor, 2	8	10					
Best Bower, 2	8	10					
Small Bower, 2	8	10					
Spare, 2	8	10					
Seizings	1	36					
Wing cabled, 2 No.	8	20					
Dog, 2 No.	7½	20					
Seizing	1	36					
Stream Anchor, 2	4½	7					
Kedge, 2	3½	6					
Deck & Bit, cabled, 10 No.	10½	36					12
Lanyards, 10 No.	3	50					
Seizing	2	49					
	1	49					

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Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	9	18					
Ditto — — — —	8	18					
Ditto — — —	7	20					
Ditto — — —	6½	8					
Ditto — — —	6	8					
Ditto — — —	5½	12					
Ditto — — —	5	12					
Ditto — — (none.)							
Ditto — (none.)							
Shank painters Sh. Anchor cab.	4	6					
Best Bower, 2 —	7½	8				1	
Small Bower, 2 —	7½	8				1	
Spare, Cabled, 2 —	7½	11					
Seizing —	1	18					
Ropes Buoy Sheet Anchor cabled	7½	24					
Best Bower Cabled —	7½	24					
Small Bower Cabled —	7½	24					
Seizing —	1	18					
Stream Anch. Cabled —	4½	30					
Kedge Cabled — —	4	30					
Davit, 2 — — — worn	3	12					
Bell — — — —	3	3				1	
Buckets — — —		1	Coil Lashing				
Swab, 2 — worn	3	28	Single	11	2		
Entering, 6 — —	3½	30					
Passing — — —	5	58				2	
Lanyard — —	2½	12					
Slip — — — —	3	40					
Quarters, Poop and Stanchion in the Waste, — —	3½	144				16	
Fore, Main & Mizen Tops		1	Coil Lashing				
Wheel or Tiller White —	4	28	Single	13	2	2	
Strapping — —	4	1½					
Seizing — —	1	6					
Puddening of Anchors, worn	4	128	Old Canvas.	yd			
	3	40		20			
Seizings,	1½	96					
Slings Buoy, 4 Pair — —	4	52				6	
Lanyards, 3 — worn	3	15					
Seizings, 6 —	1	42					
Gun — — —	8	7					
Nut — — —	7	4					
But, 4 Pair — —	5	20				4	
Hogshead, 4 Pair — —	4	16					
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys — worn	4	6					
Swabs — worn	3½	24					
Cable Bends, 6 — —	2½	64					
Rudder Pendants, cabled, 2 —	7	10				4	
Lanyards, 2 —	2½	10					
Falls, 2 — — —	3	46	Long Tackle	26	2	2	2
			Single	13	2	2	2
Strapping — —	4	5					
Seizing — — —	¾	12					
Stern Ladders, 4 Strands, 2 worn	6	28					
Middle Rope, 2 worn	2	20					
Lashing — worn	1	9					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, — —	8	7					
	5	2					
Swifters for Capston-Bars —	2	60					
Lashing-Cables between Decks Sheep-Pens, Steep-Tubs, Tubs in the Tops, & Booms		4½	Coils Lashing				
Nettings for the Quart. Waste, Tops, and Barricadoes —	1½	900					
Hallyard for Top Lanthorn —	1	28	Single	5	1		
Ensigns — —	1½	36					
Jacks — —	1	12					
For Colours: Head Line —		4	White-lines				
For Colours: Rope Bands —		6 lb	Marlines				
For Colours: Pendant Slings —	¼	28					
Awnings Ridge and Side Rope —	3½	128	Single	12	3		
Stops — —	1	38					
Crowfeet — —	1	150		32	1		
			Euphro	22	1		
				20	1		
Hallyard — —	1½	38					
Ridge Tackle Fall —	2½	10	Double	9	1		
			Single	9	1		
For different Uses of the Ship			Snatch Iron	22	4	4	
			Bo. Hooks	15	4	4	4
			Coaked	14	4	4	4
Strapping — —	4	8					
Seizing — —	¼	28					
LONGBOAT.							
Burton Pendants, 1 Pair — —	4	3	Single	11	2		2
Runner — — —	3	12					
Falls, 2 — —	2½	20	Double	9	2	2	2
			Single	9	2	2	2
Strapping — —	3	3					
Shrouds, 2 Pair — —	3½	21	Dead Eyes	5	4		
Lanyards, 4 — —	1½	8					
Stay — — — —	4	7	Dead Eyes	5	1		
Lanyard — —	1½	2½					
Tye — — — —	3	7	Single	9	1		
Main Hallyard — —	2	18	Single	7	2		
Outer Hallyard — —	2	20	Doub. I. bo.	7	1		
			Single	7	1		1
Sheet — — — —	2	15	Double	8	1		
			Single	8	1		1
Wood Hoops, 12							
Downhaller — —	1½	15	Single	5	1		
Strapping — —	2	8					
Topping Lift — —	2	15					
Fore Hallyard — —	2	14	Single	7	1		
Sheet — — —	2	5					2
Tack — — —	1	1					
Bowline — —	2½	1½					1
Jib Hallyards — —	2	21	Single	7	2	1	1
Sheet — — —	2½	10					
Outhaller — —	2½	10	Iron Trave		1		
Innhaller — —	1	7					
Boat-Rope, cabled — —	7½	36					
Lanyard — —	2½	3					

64 Gun Ship. 1369 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — — —	4	36					
Grapnel-Rope, cabled — —	4	50					
Painter — — — —	4	7					
Sternfaſt — — worn	3¼	12					
Fenders, cabled, 6 — worn	6	14					
Lanyards, 6 — —	2	10					
Rudder Lanyards, 2 — —	2	2½					
PINNACE.							
Hallyards Main and Fore, 2 —	1¾	20					
Sheets, 4 — — —	1¾	20					
Grapnel-Rope, cabled — —	3¼	70					
Painter — — —	3¼	10					4
Sternfaſt — — worn	2¼	10					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
PINNACE CONTINUED.							
Slings, 2 Pair — —	5½	10				8	12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					
YAWL or CUTTER.							
Hallyards (*if Cutters*) 2 Pair —	2	12	Iron Trave		2		
Sheets, 4 — — —	2	8					
	1¾	8					
Grapnel-Rope, cabled —	3¼	80					
Painter — — —	3¼	10					4
Slings, 2 Pair — —	5½	10				8	12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	4					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 41, Article 2, by Gammonings, 2 —| 7 | 130 | is meant, Two Gammonings are neceſſary, made of Rope 7 Inches in Circumference, containing in the Whole 130 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
SHIPS OF 50 and 44 GUNS,
Being reſpectively of 1044 and 879 Tons Burthen.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	3	110					
Gammonings, 2	6	84					
Shrouds fine, 1 Pair	6	14	Hearts	9	2	2	2
Collars fine, 2	5	5	Hearts	9	2		
Seizings, 2	1	8					
Laſhings, 2	1 1/2	6					
Lanyards fine, 2	2 1/2	8					
Bobſtays cabled fine 2 Pair	7	18	Hearts	9	2		
Collars fine 2	7	5	Hearts	9	2		
Seizings, 2	1	16					
Laſhings, 2	1 1/2	6					
Lanyards fine, 2	3	10					
Horſes, 2	3 1/2	14				6	
Straps, 2	3	3				4	
Lanyards, 2	1 1/2	5					
SPRITSAIL.							
Horſes, 2	3	9					
Stirrups, 6	2 1/2	5				6	
Braces, 2	2 1/2	62	Double	9	4		
Pendants, 2	3	5	Single	9	4		
Strapping	3	9					
Lifts, 2	2 1/2	46	Single	9	4		
Beckets, 2	2 1/2	3 1/2					
Strapping	2 1/2	3					
Seizing	1/4	9					
Standing, 2	3	7				4	
Straps, 2	3	3					
Lanyards, 2	1 1/2	4					
Hallyard	2 1/2	28	Long Tackle	18	1	1	1
			Single	9	1		
Strapping	3	2					
Seizing and Laſhing	3/4	6					
Slings, 1 Pair	4 1/2	4					
Seizing and Racking	1/4	8					
Clew-Lines, 2	2	32	Strap bound	8	4		
			Single	8	2		
Strapping	2 1/2	4					
Buntlines, 2	2	24	Single	8	2		
Strapping	2	1					
Earings, 4	1	12					
Sheets cabled ſingle, 2	3 1/2	30					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
JIBB.							
Horſes, 1	3 1/2	15					
Seizings, 2	1/2		of a Tar'Line				
Guy Pendants, 1 Pair	3 1/2	23	Single	11	2		
Falls, 2	2 1/2	25	Single	9	4		
Strapping	3	1 1/2					
	2 1/2	2					
Laſhers, 4	1	10					
Out-Haller	3	9					
Tackle-Fall	2	24	Single	7	2		
Strapping	2	1					
Stay	3 1/2	25	Single	11	1		
Strapping	3 1/2	1					
Tacklefall	2	22	Double	7	1		
			Single	7	1		
Strapping	2	1					
Hallyard	3	35	Single	10	1		
Strapping	3	1					
Downhaller	2	31	Single	7	1		
Sheets ſingle, 2	3 1/2	32	Single	10	2		
Pendants, 1 Pair	4	11	Single	11	2		
SPRITSAIL TOPSAIL.							
Horſes, 2	2	7					
Braces, 2	2	44	Single	7	2		
Strapping	2	1					
Lifts ſingle, 2	2	32	Single	8	2		
Strapping	2	2					
Hallyard	2	24	Single	7	2		
Strapping	2	2 1/2					
Laſhing	1/4	6					
Parrel-Ropes, 2	2	3	Parrel	10	1		
Clewlines, 2	1 1/2	40	Single	6	4		
Strapping	1 1/2	1 1/2					
Lacing and Earings, 2	1/4	30					
FORE-MAST.							
Woolding	2 1/2	215					
Girdlines, 2	3 1/2	54	Single	13	2		
Strapping	3 1/2	2					
Seizing	1/4	6					
Laſhings, 2	1 1/2	15					

50 and 44 Gun Ships. 1044 and 879 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 2 Pr.	8½	14½	Sin. Coaked	17	2		8
Strapping —	5½	3					
Seizing — —	1	7	Double				
Runners of Tackles, 4 —	5½	28	Thin Coak	17	4		
Strapping —	5	6					
Falls of Tackles, 4 — —	3	148	Single	18	4	4	4
			Thin Coak	12	4	2	2
Strapping —	5	8					
Seizing — —	¾	44					
Shrouds cabled fine, 7 Pair —	8½	116	Dead Eyes	13	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1½	67					
End, 14 — —	1	67					
Lanyards fine, 14 — —	4	84					
Ratling — — —	1½	200					
Stay cabled fine 4 Strands —	13	11½	Heart	17	1		
Seizings, 3 — —	1½	15					
Lanyard fine — —	4½	10					
Collar cab. 4 Str. fine doub.	6½	6	Heart	17	1		
Seizings, 2 — —	1½	8					
Lashing — —	2	5					
Preventer Stay cabled 4 Str. fine	8½	11½	Heart	12	1		
Lanyard fine —	3½	6					
Coll. cab. 4 Str. fine double —	4½	5	Heart	12	1		
Lashing —	1½	5					
Seizings, 2 —	1½	12					
Catharpin Legs, 4 —	5	8					
Seizings, 8 —	1	32					
Crowfoot for the Top — —	1	90	Euphro	19	1		2
Tackle — —	1	6					
Strapping	1	1					
Jeers { Tye — — —	5½	74	Doub. Coak.	18	4		
Falls, 2 — — —							
Strapping — — —	6½	16					
Seizing — — —	1	24					
Lashing at the Mast Head —	3½	32					
Yard — —	2	10					
Stoppers, 2 — —	4½	6					
Horses, 2 — — — —	4½	12					2
Stirrups, 6 — — —	3	10					6
Seizings, 4 — — —		½	of a Tar'Line				
Lanyard 1 — — —	2	3½					
Yard Tackle Pendants, 2 —	5½	7	Do. thin Co.	14	2		
Falls, 2 — —	3	74	Dou. thin Co.	16	2	2	2
			Single	11	2		
Strapping — —	4	7½					
Seizing — —	¼	13					
Inner Tric. Lines, 2	2	31	Single	7	2		
Outer Tric. Lines, 2	1½	31	Single	6	4		
Strapping — —	2	6					
Braces, 2 — — —	3½	80	Single Coak.	12	4		
Pendants, 2 — — —	4½	9	Single Coak.	12	2		
Preventer, 2 — —	3½	10					
Strapping — — —	4	4					
Seizing — — —	¼	12					
Lashing — — —	1½	18					
Preventers *(in War only)* 2	3	70	Single	11	4		

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks.	Thimbles.
FORE-MAST CONTINUED.							
Braces Preventer Strapping —	3	3					
Seizing — —	¾	10					
Lifts, 2 — — — —	3½	82	Single	12	6		
Span for the Cap — —	4½	6½					
Short Span — — —	3½	2½					
Strapping — — —	4	4					
Seizing — — —	¾	14					
Jigger Tackle, No. 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping —	3	4					
Truss Pendants, 2 — — —	6	11½					4
Falls, 2 — — —	2½	42	Double	9	4	4	4
Strapping — —	3	4					
Eye Seizings, 2 —	1	11					
Nave Line — —	1½	15	Single	6	1		
Puddening the Yard — worn	6	8½					
Clew-garnets, 2 — — —	3	54	Sin. Strapbo.	11	4		
			Single	11	2		
Straps ab. the Yard	3	6					
Strapping — —	3	1½					
Seizing — —	¾	12					
Lashing — —	1	8					
Buntline Legs, 4 — — —	2½	38	Double	8	4		
Falls, 2 — — — —	2½	38	Single	8	2		
Strapping — — —	2½	8					
Leechline Legs, 2 — — —	2	39	Double	7	4		
Falls, 2 — — — —	2	39	Single	7	8		
Strapping — — —	2½	8					
Slablines, 2 — — —	2	27	Single	7	2		
Strapping — — —	2	1					
Bowlines, 2 — — — —	3½	46	Single	13	4		2
Bridles, 2 — — —	3½	4					
Strapping — — —	3½	4					
Seizing — — —	¼	9					
Lashing — — —	2	8					
Earings, 6 — — — —	1½	26					
Sheets Cabled, 2 — — —	5	66	Sin. Coaked	17	2		2
Strapping — — —	5	3½					
Seizing — — —	1	12					
Stoppers, 2 — — —	4	4					
Tacks Taper and Cabled, 2 —	6½	34	Shouldered	16	2		
Strapping — — —	5	4½					
Seizing — — —	1	8					
Stoppers, 2 — — —	5	4½				2	2
Lanyards, 2 —	1½	4					
Gammoning the Bumkin, worn —	3½	13				2	6
Lanyards, 2 — — —	1½	8					
Lany. for Pudden & Dolphin —	1	8					4
Slings, 1 Pair — — —	9	7½					1
Strap — — —	9	3					
Seizings, 2 — — —	1	15					
Lanyard — — —	2½	6					
Stayfail Hallyard — —	3	25	Single	10	2		
Sheets, 2 — — —	3	23	Single	10	2		
Tack — — —	2	2					
Downhaller — —	2	23	Single	7	1		
Strapping — —	3	3½					
	2						

50 and 44 Gun Ships. 1044 and 879 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Studd. Sail Hallyard, Inner, 2 Pr.	2	40	Single	9	6		
Outer, 2 Pr.	2½	72	Single	9	4		
Sheets, 2 Pr.	2	12					
Tacks, 2 Pr.	2½	54	Single	9	2		
Strapping	2½	14					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair	4½	5					2
Falls, 2	2½	48	Double	9	2	2	2
			Single	9	2	2	2
Strapping	3	3½					
Shrouds fine 4 Pr.	5½	55	Dead Eyes	8	8		
Seizings Eye, 4	¾	16					
Throat, 8	¾	49					
End, 8	¾	36					
Lanyards fine, 8	2½	40					
Ratling	1	80					
Standing Backstays fine 3 Pr.	5½	89	Dead Eyes	8	4		
Seizings Eye, 3	¾	12					
Throat, 6	¾	39					
End, 6	¾	18					
Lanyards fine, 6	2½	20					
Breast Backstay Runners, 2	3½	8	Single	11	2		
Falls, 2	2½	18	Double	10	4		
Strapping	3	3					
Stay Cabled 4 Strands fine	6	18					
Collar fine	5	3	Single	15	1		
Tackle	2½	19	Long Tackle	18	1		
			Single	10	1		
Strapping	3½	3					
Seizing	1	6					
	¾	6					
Preventer Stay cab. 4 Str. fine	4½	18					
Collar, fine	4	3	Single	12	1		
Tackle	2	17	Long Tackle	16	1		
			Single	9	1		
Strapping	3	2½					
Seizing	¾	8					
Lashing the Col.	2	5½					
Shifting Backstays, fine, 1 Pair	5½	30					2
Tackles 4 No.	2½	40	Double	10	4	4	4
			Single	10	4	4	4
Strapping	3½	6½					
Futtock Shrouds, fine, 4 Pair	5½	20	Plates with Dead Eyes	8	8	8	8
Seizing Upper, 8	¾	28					
Lower, 8	¾	24					
Ratling	1	26					
Top Rope Pendants, fine, 2	7	31	S. Brass Shiv. Iron Bound	20	2		2
Falls, 2	4	86	Treb. Ir. Bo. Coaked	15	4		
Tye	4½	36	Flat Side	16	2		
			Doub. Coak.	16	1		
Strapping	4½	6					
Seizing	1	10					
Lashers at the Mast Head, 2	2	9					
Yard	1½	4					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2	3	94	Do. thin Co.	19	2		
			Sin. Ditto	19	2	2	2
Strapping	4	7					
Seizing	¼	16					
Horses, 2	3½	10					
Stirrups, 6	3	7					6
Braces, 2	3	76	Single	10	4		
Pendants, 2	3½	8	Single	10	2		
Preventer, 2	3	9					
Strapping	3	5					
Lifts, 2	3	54	Double	10	2		
			Single	10	4		
Beckets, 2	3	2					
Strapping	3	6					
Seizing	¼	12					
Parrel Ropes, 2	2½	9	Parrel	16	1		
Racking and Seizing	¼	15					
Clewlines, 2	3	72	Sin. Str. bo.	10	4		
			Single	10	2		
Strapping	3	8					
Buntlines, 2	2½	54	Single	8	4		
Strapping	2½	3					
Leechlines, 2	2	22	Single	7	2		
Strapping	2	1					
Bowlines, 2	2½	54	Single	9	2		2
Bridles, 4	2½	9					
Strapping	2½	1½					
Lashing	1	10					
Reefstackle Pendants, 2	3	37	Double	7	4	2	2
Falls, 2	1½	44					
Strapping	2	2					
Earings, 10	1½	36					
Sheets, 2	5½	45	Sin. Shoul.	17	2		
			¼ do. th & thin	17	2		
Straps for Sheet Blocks, 2	6	4½					
Quarter Blocks, 2	4½	7					
Lashers for Quarter Blocks, 2	2	6					
Seizings, 2	1	18					
Span worn	3	7					
Stoppers, 2	4½	4					
Slings, 1 Pair	4	8					
Stayfail Stay	3½	19	Single	11	1		
Tackle	2	15	Double	8	1		
			Single	7	1		
Hallyard	3	33	Single	10	1		
Strapping	3	1½					
Sheets, 2	3	30	Single	10	2		
Strapping	3	1½					
Outhaller	2	16	Single	7	1		
Downhaller	2	25	Single	7	1		
Strapping	2	1½					
Studdingsail Hallyards, 2 Pair	3	84	Single	10	6		
Sheets, 2 Pair	2½	42	Single	10	2		
Tacks, 2 Pair	3	58	Single	10	2		
Downhallers, 2	1½	52	Single	6	2		6
Boom Tackles, 2	2	70	Double	7	2		
			Single	7	4		
Tails and Straps, 2	3	16					
	2	5½					

50 and 44 Gun Ships. 1044 and 879 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	3	60					12
Lanyards, 6 — — —	1½	12					
Standing Backſtays, 2 Pair —	3	72	Dead Eyes	6	4		
Lanyards, 4 — — —	1½	20					
Stay cabled 4 Strands — —	3½	22	Single	10	1		
Strapping — — —	2½	1					
Tackle — — —	2	14	Double	7	1		
			Single	7	1		
Strapping — — —	2½	1½					
Flagſtaff Stay — — —	2	17					1
Hallyards, 1 Pair — —	1	24					
Tye — — — — —	3	13½					
Hallyard — —	1	22	Double	6	1		
			Single	6	2		
Strapping — — —	2	1½					
Horſes, 2 — — — —	2½	7					
Braces, 2 — — — — —	1½	84	Single	6	4		2
Pendants, 2 — — —	2	8	Single	6	2		
Strapping — — —	2	3					
Lifts ſingle, 2 — — —	2½	36					2
Strapping — — —	2½	1½					
Parrel Ropes, 2 — — —	1½	3	Parrel	8	1		
Clewlines, 2 — — —	1½	54	Single	6	6		
Strapping — — —	2	2½					
Bowlines, 2 — — —	1½	60	Single	6	2		6
Bridles, 2 — — —	1½	3					2
Strapping — — —	2	2					
Earings, 2 No. — — — —		1½	Tarr'd Lines				
Shifting Backſtays, 1 Pair —	3	36					2
Tackles, 2 No. —	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping — —	2	1½					
Studdingſail Hallyards, 2 Pair —	1½	66	Single	6	6		
Sheets, 1 Pair — —	1	17					
Tacks, 2 Pair — —	1½	40	Single	6	4		
Downhallers, 2 No. — —	1	15					1
Strapping — — —	1½	8					
MAIN-MAST.							
Woolding — — —	2½	225					
Girdlines, 2 — — —	3½	62	Single	13	2		
Strapping — — —	3½	2					
Seizing — — —	¾	6					
Laſhings, 2 — — —	1½	15					
Pendants of Tack. cab. fine, 2 Pr.	8½	15½	Sin. Coak.	17	2		8
Strapping —	5½	3					
Seizing — —	1	8					
Runners of Tackles, 4 — —	5½	30	Do. thin Co.	17	4		
Strapping — —	5	6					
Falls of Tackles, 4 — — —	3	162	Sin. thin Co.	18	4	4	4
Strapping — —	5	7½					
Seizing — —	¾	34					
Shrouds cabled, fine, 7 Pair —	8½	134	Dead Eyes	13	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1½	67					
End 14 — — —	1	67					
Lanyards, fine, 14 — —	4	84					
Ratling — — — —	1½	236					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stay cabled 4 Strands, fine —	14½	17½	Heart	19	1		
Seizings, 4 — — —	1½	20					
Lanyard, fine — —	4½	14					
Collar cabled 4 Strands, fine	10	7½	Heart	19	1		
Worming — —	1½	32					
Seizings, 3 — —	1½	16					
Laſhing — — worn	3	15					
Preventer Stay cab. 4 Strands fine	10	15	Heart	14	1		
Lanyard, fine —	3	8					
Col. cab. 4 ſtr. fine. do.	5	5	Heart	14	1		
Laſhing — —	2	6					
Seizings, 3 — —	1	16					
Catharpin Legs, 4 — — —	5	9					
Seizings, 8 — —	1	32					
Stay Tackle Pendant — —	5	4	Do. thin Co.	14	1		
Fall — — —	3	38	S. thin Co.	16	1	1	2
				12	1	1	1
Strapping — —	4	3					
Seizing — —	¾	12					
Laſhing — —	1½	10					
Fore-Stay Tackle Fall — —	3	38	Do. thin Co.	14	1		
			S. thin Co.	16	1	1	2
				12	1	1	1
Strapping —	4	3					
Seizing —	¾	12					
Crowfoot for the Top — —	1	90	Euphro	22	1		2
Tackle — — —	1	7					
Strapping — —	1	1					
Jeers { Tye — — —	6	80	Doub. Coak.	19	4		
Falls, 2 — — —							
Strapping — —	6½	18					
Seizing — — — —	1	24					
Laſhers to the Maſt Head,	3½	32					
Yard — —	2	12					
Stoppers, 2 — — —	4½	6					
Horſes, 2 — — —	4½	14					2
Stirrups, 6 — — —	3	10½					6
Seizings, 4 — — —		½	of a Tar'd Line				
Lanyard — — —	2	3½					
Yard Tackle Pendants, 2 —	5½	8	Do. thin Co.	14	2		
Falls, 2 — —	3	80	S. thin Co.	16	2	2	2
			Single	12	2		
Strapping — —	4	7½					
Seizing — —	¼	13					
Inner Tricing-Lines, 2	2	32	Single	7	2		
Outer Tricing-Lines, 2	1½	32	Single	6	4		
Strapping — —	2	6					
Braces, 2 — — —	3½	74	Sin. Coak.	12	2		
Pendants, 2 — —	4½	9	Sin. Coak.	12	2		
Preventer, 2 — —	3½	10					
Strapping — —	4	3					
Seizing — — —	¾	10					
Preventers *(in War only)* 2	3	72	Single	11	4		
Strapping — —	3	3					
Seizing — — —	¾	10					
Lifts, 2 — — — —	3½	87	Single	12	6		
Span for the Cap — —	5	7					
Short Span — —	3½	2					

50 and 44 Gun Ships. 1044 and 879 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — —	4	4					
Seizing — — —	¼	14					
Jigger Tackles, 2 —	2	20	Double	8	2		
			Single	8	2		
Strapping — —	3	4					
Truss Pendants, 2 — —	6	14					4
Falls, 2 — — —	2½	50	Double	9	4	4	4
Strapping — —	3	4					
Eye Seizings, 2	1	11					
Nave-Line — — —	1½	16	Single	6	1		
Puddening the Yard — worn	6	8½					
Clewgarnets, 2 — — —	3	62	Strapbound	12	4		
			Single	12	2		
Strap about the Yard —	3	7					
Strapping — —	3	1½					
Seizing — — —	¾	18					
Lashing — — —	1	8					
Buntline Legs, 4 — —	2½	38	Double	8	2		
Falls, 2 — — —	2½	44	Single	8	10		
Strapping — —	3	10					
Leechline Legs, 2 — —	2	43	Double	7	4		
Falls, 2 — — —	2	43	Single	7	10		
Strapping — —	3	10					
Slablines, 2 — — —	2	34	Single	7	2		
Strapping — —	2	1					
Bowlines, 2 — — —	3½	46	Double	14	1		4
Bridles, 4 — —	3½	12					2
Strapping — —	3	3½					
Seizing — — —	¾	4					
Lashing — — —	2	4					
Tackle — — —	2	12	Long Tackle	14	1	1	1
			Single	8	1	1	1
Strapping — —	2½	3					
Earings, 6 — — —	1½	28					
Sheets, cabled, 2 — —	5½	72	Sin. Coak.	17	4		4
Strapping — —	5½	7½					
Seizing — — —	1	15					
Lashers, 2 — — —	2	6					
Stoppers, 2 — — —	4½	4					
Tacks Taper and Cabled, 2 —	7	36					
Stoppers, 2 — — —	4½	4				2	2
Lanyards, 2 — —	1½	15					
Lany. for the Pudden & Dolphin —	1	8					4
Slings, 1 Pair — — —	9	8½					1
Strap — — — —	9	3					
Seizing — — —	1	15					
Lanyard — — —	2½	6					
Quarter Tackle Pendants, 2 —	5	9	Do. thin Co.	14	2		
Falls, 2 — —	3	70	S. thin Co.	16	2	2	2
			———	12	2	2	2
Strapping — —	4	7					
Seizings, 3 — —	¼	13					
Luff Tackles, 4 No. — —	3	120	Double	12	4	4	4
			Single	12	4	4	4
Strapping — —	3½	8					
Seizing — — —	¼	20					
Stayfail Stay — — — worn	3½	10½					2
Collar — — —	3	2					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayfail Collar Seizing — —	¼	6					
Lanyard — —	1½	4					
Hallyard, 1 — — —	3	30	Single	10	3	1	1
Sheets, 2 — — —	3	11	Single	10	2	1	1
Tacks, 2 — — —	3	4					
Downhaller — — —	2	16	Single	8	1		
Strapping — — —	3	3					
	2½	2					
Studd. sail Hallyards, Inn. 2 Pr.	2	48	Single	9	6		
Outer, 2 Pr. —	2½	82	Single	9	4		
Sheets, 2 Pair — —	2½	23					
Tacks, 2 Pair — —	2½	44	Single	9	2		
Strapping — — —	2½	16					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair —	4½	6					2
Falls, 2 — — —	2	50	Double	9	2	2	2
			Single	9	2	2	2
Strapping — — —	3	4					
Shrouds, fine, 4 Pair — —	5½	63	Dead Eyes	8	8		
Seizings Eye, 4 — —	¼	16					
Throat, 8 — —	¼	49					
End, 8 — —	¼	36					
Lanyards, fine, 8 — —	2½	40					
Ratling — — —	1	86					
Standing Backstays, fine, 3 Pr. —	5½	100	Dead Eyes	8	4		
Seizings Eye, 3 —	¼	12					
Throat, 6 —	¼	39					
End, 6 —	¼	18					
Lanyards, fine, 6	2½	20					
Breast Backstay Runners, 2 —	3½	8	Single	11	2		
Falls, 2 — — —	2½	18	Double	9	4		
Strapping — —	3	2½					
Stay Cabled 4 Strands, fine —	6	19½					
Collar, fine — — —	5	3	Single	15	1		
Tackle — — —	2½	18	Long Tackle	18	1		
			Single	9	1	1	1
Strapping — — —	3½	3					
Seizing — — —	¾	12					
Lashing — — —	2	6					
Preventer Stay, Cabled 4 str. fine	4½	19					
Collar, fine —	3½	2½	Single	11	1		
Tackle — —	2	16	Long Tackle	16	1		
			Single	9	1	1	1
Strapping —	3	3					
Seizing — —	¾	8					
Lashing the Col. —	1½	6					
Shifting Backstays, fine, 1 Pair —	5½	33					2
Tackles, 4 No. —	2½	40	Double	10	4	4	4
			Single	10	4	4	4
Strapping — —	3½	6					
Futtock Shrouds, fine, 4 Pair —	5½	52	Pla with D.E	8	8	8	8
Seizings Upper, 8 —	½	28					
Lower, 8 —	¾	24					
Ratling — —	1	26					
Top Rope Pendants, fine, 2	7	33	Sin. I. bound Brass Shiv.	20	2		2

50 and 44 Gun Ships. 1044 and 879 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2	4	90	Treb. I. bo.	15	4		
Tye	4½	38	Flat Side	17	2		
			Double	17	1		
Strapping	4½	6					
Seizing	1	10					
Laſhers at the Maſt Head, 2	2	10					
Yard	1½	4					
Hallyards, 2	3	114	Do. thin Co.	19	2		
			S. thin Co.	19	2	2	2
Strapping	4½	6					
Seizing		15					
Horſes, 2	3½	11					
Stirrups, 6	3	7½					6
Braces, 2	3	62	Single	10	2		
Pendants, 2	3½	8	Single	10	2		
Preventers, 2	3	9					
Span ab. the Mizen Maſt	4	4½					
Strapping	3	3					
Liſts, 2	3	61	Double	10	2		
			Single	10	4		
Beckets, 2	3	2½					
Strapping	3	6					
Seizing		15					
Parrel Ropes, 2	2½	9	Parrel	18	1		
Racking and Seizing		16					
Clew-lines, 2	3	80	Sin. Str. Bo.	10	4		
			Single	10	2		
Strapping	3	7					
Bunt-lines, 2	2½	59	Single	8	4		
Strapping	2½	3					
Leech-lines, 2	2	26	Single	7	2		
Strapping	2	1					
Bowlines, 2	3	56	Single	11	2		2
Bridles, 4	3	14					4
Strapping	3½	1½					
Seizing		6					
Frapping and Laſhing	1½	10					
Reeftackle Pendants, 2	3	40	Double	7	4	2	2
Falls, 2	1½	56					
Strapping	2	2					
Earings, 10	1½	38					
Sheets, 2	6	50	Sin. Shoul.	17	2		
			¼ Double	17	2		
Straps for Sheet Blocks, 2	6½	4	Thick & thin				
Quarter Blocks, 2	4½	7					
Laſhers for Quart. Blocks, 2	2	7					
Seizings, 2	1	18					
Span worn	3	7					
Stoppers, 2	4½	4					
Slings, 1 Pair	4	9					
Stayſail Hallyard	3	36	Single	10	1		
Strapping	3	1					
Sheets, 2	3	30	Single	10	2		
Strapping	3	1½					
Pendant	4	4	Single				
Tack	3	4½					
Downhaller	2	21	Single	8	2		
Strapping	1½	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2	1½	35	Single	6	2		
Middle Stayſail Stay	3	20	Single	10	1		2
Tackle	2	18	Double	8	1		
			Single	8	1		
Hallyard	2½	35	Single	9	1		
Sheets, 2	2½	35		9	2		
Tack	2	4					
Downhaller	2	24	Single	8	2		
Strapping	2½	6					
	2½	6					
Tricing-line	2	16	Single	8	1		
Studdingſail Hallyards, 2 Pair	3	88	Single	10	6		
Sheets, 2 Pair	2½	44	Single	10	2		
Tacks, 2 Pair	3	58	Single	10	4		
Downhallers, No. 2	1½	54	Single	6	2		6
Boom Tackles, 2 No.	2	70	Double	8	2		
			Single	8	4		
Laſh. for Booms worn	2½	20					
Tailing and Strapping	3	16					
	2	5½					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair	3	69					12
Lanyards, 6	1½	12					
Standing Backſtays, 2 Pair	3	82	Dead Eyes	6	4		
Lanyards, 4	1½	16					
Stay cabled 4 Strands	3½	19	Single	11	1		
Strapping	3	1					
Flagſtaff Stay	2	25					1
Hallyards, 1 Pair	1	24					
Tye	3	15					
Hallyard	1½	30	Double	7	1		
			Single	7	2		
Strapping	2	1½					
Horſes, 2	2½	8					
Braces, 2	1½	68	Single	6	2		
Pendants, 2	2	8	Single	7	2		
Strapping	2	3					
Lifts ſingle, 2	2½	39	Single				2
Strapping	2½	1½					
Parrel Ropes, 2	1½	3	Parrel	9	1		
Clewlines, 2	1½	60	Single	6	6		
Strapping	1½	3					
Bowlines, 2	1½	60	Single	6	2		
Bridles, 4	1½	6					
Strapping	1½	1					
Earings, 4		1½	Tarr'd Lines				
Shifting Backſtays, 1 Pair	3	39					2
Tackles, 2 No.	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping	2	1½					
Stayſail Stay	2½	30	Single	8	1		
Hallyard	2	39	Single	7	1		
Sheets, 2	2	40	Single	7	2		
Tack	1½	6					
Downhaller	1½	26	Single	6	2		
Strapping	2	2½					

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Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	2	70	Single	7	6		
Sheets, 2 Pair	1½	36					
Tacks, 2 Pair	2	44	Single	7	4		
Downhallers, 2	1	34					2
Strapping	2	8					
MIZEN-MAST.							
Woolding	2½	90					
Girdlines, 2	3	53	Single	11	1		
Strapping	3	1½					
Seizing	¾	6					
Laſhings, 2	1½	8					
Burton Pendants, 1 Pair	4	6					2
Falls, 2	2½	54	Double	9	2	2	2
			Single	9	2	2	2
Strapping	3	3					
Shrouds, fine, 5 Pair	5½	73	Dead Eyes	8	10		
Seizings Eye, 5	1	20					
Throat, 10	¾	58					
End, 10	¾	36					
Lanyards, fine, 10	2½	50					
Ratling	1	90					
Stay Cabled 4 Strands, fine	6	12					2
Seizings, 3	1	8					
Lanyard, fine	3	5					
Collar, fine	5	3					1
Seizing	1	3					
Laſhing	1½	3					
Crowfoot for the Top	1	50	Euphro	15	1		2
Tackle	1½	5					
Strapping	1½	1					
Jeers, 1 Pair	4½	32	Treble Co.	16	1		
			Double Co.	16	1		
Strapping	4½	6					
Seizing	1	9					
Laſhing at the Maſt Head	2½	10					
Yard	2	6					
Derrick	3½	33	Double	12	1		
Span	3½	3	Single	12	1		1
Strapping	3½	2					
Seizing	¼	10					
Laſhing	1½	8					
Vang Pendants, 2	3½	9					
Falls, 2	2	30	Single	8	4	2	2
Strapping	2½	1					
Bowlines, 2	2½	20	Single	9	4		2
Strapping	2½	2					
Truſs Pendant	3½	5					2
Fall	2	18	Long Tack.	15	1	1	1
			Single	8	1	1	1
Strapping	2½	3					
Seizing	¼	8					
Brails Peek Legs, 2 Pr.	2	11					
Falls	2	17	Single	6	4		2
Middle	2	21	Single	7	2		
Throat	2½	23	Single	9	2		
Middle	2	21	Single	7	2		
Foot	2	18	Single	7	2		2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping	2½	8					
Lacing Mizen to Yard	1½	26					
Maſt worn	2½	18					
Earings, 2	1½	10					
Peek Hallyards, 1 Pair	1½	21	Single	6	1		1
			Double	11	1		1
Sheet	3½	24	Single	11	1		
Strapping	3	3					
Seizing	1	7					
Tack	2	3					
Slings, 1 Pair	4	6					
Stayſail Stay worn	4	13					2
Collar	3½	3					1
Seizing	¼	3					
Laſhing	¼	3					
Lanyard	1½	6					
Hallyard	2½	27	Single	8	3		
Sheets, 2	2½	13	Single	8	2		1
Tack	2½	2½					
Downhaller	1½	15	Single	6			
Strapping	2½	5					
Brails, 2	2	27	Single	7	2		2
Driver Hallyards, 2 Pair	2½	34	Single	9	4	1	2
Sheets, 2	2½	17	Single	9	2		
Tacks, 2	2½	22	Single	9	2		
Downhaller	1½	18	Single	6	1		
Strapping	2½	6					
Laſhing	¼	12					
CROSS-JACK-YARD.							
Span about the Cap	3	2					
Braces, 2	2	50	Single	8	2		
Pendants, 2	2½	5	Single	8	2		
Preventer, 2	3	7					
Strapping	2	2					
Lifts Running, 2	2	48	Single	8	4		
Strapping	2	2½					
Slings, 1 Pair	3½	4½	Sin. do. Scord	12	1		
Strapping	3	2					
Seizing	¼	3					
Laſhing	1	5					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	3½	36	Dead Eyes	6	6		
Seizings, 6	½		Tar'Line				
Lanyards, fine, 6	2	24					
Ratling	1	46					
Standing Backſtays, fine, 1 Pair	3½	26	Dead Eyes	6	2		
Seizings, 4	½		of a Tar'Line				
Lanyards, fine, 2	2	8					
Stay cabled, 4 Strands, fine	4	11					
Lanyard, fine	2	5					2
Collar	3	2	Single	12	1		
Seizing and Laſhing	¼	6					
Flag-ſtaff Stay	1½	13					
Hallyards, 1 Pair	1	17					
Shifting Backſtays, fine, 1 No.	3½	12½					4

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Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backstay Tackle	2	12	Double	7	1	1	1
			Single	7	1	1	1
Strapping	2½	4					
Futtock Shrouds, fine, 3 Pr.	3½	10	Plates with Dead Eyes	6	6	6	6
Seizings, 6		1	Tar'd-Lines				
Ratling	1	11					
Top Rope Pendants, fine, 2	4½	15	Single I. bo.	12	1		1
Falls, 2	2½	36	Double D°	10	2		
Tye	3½	13	Sin. do. Scord	12	1		
Hallyard	2	38	Double thin	10	1		
			Single thin	10	1	1	1
Strapping	3	3					
Lashing	¾	3					
Horses, 2	2½	8					
Stirrups, 4	2	4					4
Braces, 2	2	43	Single	7	2		
Pendants, 2	2½	3½	Single	7	2		
Strapping	2	1½					
Lifts, 2	2	46	Double	7	4		
			Single	7	4		
Strapping	2½	3					
Parrel Ropes, 2	2	4	Parrel	11	1		
			Strap bound	7	4		
Clew-lines, 2	2	54	Single	7	2		
Strapping	2	4					
Buntline	1½	38	Single	6	2		
Strapping	1½	1					
Leechlines, 2	2	18	Single	7	2		
Strapping	2	1					
Bow-lines, 2	1½	37	Single	6	2		2
Bridles, 4	1½	6					2
Strapping	1¼	1					
Reef Tackle Pendants, 2	3	32					
Falls, 2	1½	38	Double	7	2		
			Single	7	2		
Strapping	2	1					
Earings, 8	1	27					
Sheets, 2	3½	32	Sin. Should.	11	2		
			Double	11	1		
Strapping	4	2					
	3	2½					
Seizing	¾	14					
Lashing	1	4					
Stayfail Hallyard	2	23	Single	7	1		
Sheets, 2	2	25	Single	7	2		
Tacks, 2	2	2					
Downhaller	1	15	Single	5	1		
Strapping	2	1½					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	2	32					8
Lanyards, 4	1	10					
Backstays, 1 Pair	2	29					4
Lanyards, 2	1	6					
Stay	2½	11					1
Lanyard	1	3					
Tye	2	5½					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1½	25	Single	5	2		
Horses, 2	2	5					
Braces, 2	1½	35	Single	5	2		
Lifts, single, 2	2	27					2
Parrel Ropes, 2	1	3	Parrel	6	1		
Clew-lines, 2	1½	42	Single	5	2		
Bow-lines, 2	1	39					
Bridles, 4	1	3					4
Earings, 2		1	Tarr'd-Line				
Strapping	1½	3					
NECESSARY ROPES.							
Viol Cabled	11	34	Single Coak.	42	1		
Strapping	8½	8					
Seizing	1½	10					
Lashing	3½	8					
Winding Tackle Pendant	9	11	Co. Fourfold	18	1		
			Treble	18	1		
Fall	3½	68	Single		1		
Strapping	6	16					
Seizing	1½	16					
Catt Falls, 2	4	82	Treble I. bo. Brass Shiv.	18	2		
Lanyards, 2	2	22	Single	8	2		4
Stoppers 2 No.	4	4					
Guy's Mast-Head, 2	7½	27					
Fore, 2	7½	17					
After, 2	4½	19					
Fish Tackle Pendant	7½	9	Single Coaked	20	1	1	1
Fall	3½	42	Long Tack.	32	2		
Strapping	5	5					
	4½	4					
Seizing	1½	9					
	1	9					
Lanyard	2½	15					
Anchor Stock Tacklefall	2½	22	Double	9	1	1	1
			Single	9	1	1	1
Bill Pendant	4½	8½				1	2
Strapping	3	2					
Seizing	¾	9					
Stoppers Sheet Anchor, 2	6½	7					
Best Bower, 2	6½	7					
Small Bower, 2	6½	7					
Spare, 2	6½	7					
Seizings	¾	28					
Wing cabled, 2 No.	6½	14					
Dog, 2 No.	6	14					
Seizing	¾	26					
Stream Anchor, 2	4	6					
Kedge, 2	3	4					
Deck & Bit, cabled, 10 No.	8½	30					10
Lanyards, 10 No.	2½	42					
Seizing	1½	34					
	1	34					

50 and 44 Gun Ships. 1044 and 879 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	7	15					
Ditto — — — —	6½	15					
Ditto — — —	6	18					
Ditto — — —	5½	18					
Ditto — — — —	5	6					
Ditto — — — —	4	10					
Ditto — — —	3½	12					
Ditto — — (none.)							
Ditto — (none.)							
Shank painters Sh. Anchor cab.	6	9					
Beſt Bower, 2 —	6	6					1
Small Bower, 2 —	6	6					1
Spare, Cabled, 2 —	6	9					
Seizing —	¾	17					
Ropes Buoy Sheet Anchor cabled	6	24					
Beſt Bower Cabled —	6	24					
Small Bower Cabled —	6	24					
Seizing —	¾	18					
Stream Anch. Cabled —	3½	30					
Kedge Cabled — —	3	30					
Davit, 2 — — — worn	3	10					
Bell — — — —	2½	2					1
Buckets — — —		80	Coil Laſhing				
Swab, 2 — — worn	3	24	Single	10	2		
Entering, 6 — —	3½	20					
Paſſing — — —	4	50					2
Lanyard — —	2	11					
Slip — — — —	3½	30					
Quarters, Poop and Stantion in the Waſte, — —	3½	130					16
Fore, Main & Mizen Tops		1	Coil Laſhing				
Wheel or Tiller White —	3½	24	Single	11	2		2
Strapping — —	3	1½					
Seizing — —	1	6					
Puddening of Anchors, worn	3½	100	Old Canvas.	yd			
	2	30		20			
Seizings,	1	80					
Slings Buoy, 4 Pair — —	3½	48					6
Lanyards, 3 — worn	2½	12					
Seizings, 6 —		2	Tarr'd Lines				
Gun — — —	6½	6½					
Nut — — —	5	4					
But, 4 Pair — —	5	20					4
Hogſhead, 4 Pair — —	4	16					4
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys — worn	3½	5					
Swabs — worn	3½	20					
Cable Bends, 6 — —	2	62					
Rudder Pendants, cabled, 2 —	5½	8½					4
Lanyards, 2 —							
Falls, 2 — — —	3	42	Long Tackle	24	2	2	2
			Single	12	2	2	2
Strapping — —	4	5					
Seizing — — —	¾	12					
Stern Ladders, 4 Strands, 2 worn	4½	22					
Middle Rope, 2 worn	1½	15					
Laſhing — worn	1	9					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, — —	6	6					
	3½	2					
Swifters for Capſton-Bars —	2	55					
Laſhing-Cables between Decks							
Sheep-Pens, Steep-Tubs,		3	Coils Laſhing				
Tubs in the Tops, & Booms							
Nettings for the Quart. Waſte,							
Tops, and Barricadoes —	1	650					
Hallyard for Top Lanthorn —	1	28					
Enſigns —	1	30					
Jacks —	¼	10					
For Colours Head Line —		2	White-lines				
For Colours Rope Bands		4 lb	Marlines				
For Colours Pendant Slings —	¼	24					
Awnings Ridge and Side Rope	3	120	Single	10	3		
Stops — —	1	30					
				26	1		
Crowfeet — —	1	130	Euphro	16	1		
				14	1		
Hallyard — —	1½	36					
Ridge Tackle Fall —	2½	10	Double	8	1		
			Single	8	1		
For different Uſes of the Ship			Snatch Iron	17	4	4	4
			Bo. Hooks	13	4	4	4
			Coaked	12	4	4	4
Strapping — —	4	8					
Seizing — —	¼	28					
LONGBOAT.							
Burton Pendants, 1 Pair — —	3½	3	Single	9	2		2
Runner — —	2½	11					
Falls, 2 — —	2	18	Double	8	2	2	2
			Single	8	2	2	2
Strapping — —	2½	2½					
Shrouds, 2 Pair — —	3	18					4
Lanyards, 4 — —	1	8					
Stay — — — —	3½	5					1
Lanyard — —	1	2					
Tye — — — —	3	7	Single	9	1		
Main Hallyard — —	1½	16	Single	6	1		
Outer Hallyard —	1½	18	Doub. I. bo.	6	1		
			Single	6	1		1
Sheet — — —	1½	11	Double	6	2		
			Single	6	2		1
Wood Hoops, 10							
Downhaller — —	1	14	Single	5	1		
Strapping — —	1½	7					
Topping Lift — —	1½	14					
Fore Hallyard — —	2	12	Single	7	1		
Sheet — — —	2	4½					2
Tack — — —	1	1					
Bowline — —	2	1½					
Jib Hallyards — —	2	12	Single	7	1		
Sheet — — —	2	8					
Outhaller — —	2	9	Iron Trave		1		
Innhaller — —	1	6					
Boat-Rope, cabled — —	6½	30					
Lanyard — —	2	3					

50 and 44 Gun Ships. 1044 and 879 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	3	30					
Grapnel-Rope, cabled — —	3¼	45					
Painter — — — —	3¼	7					
Sternfaſt — — worn	3	12					
Fenders, cabled, 6 — worn	5	12					
Lanyards, 6 — —	1¼	10					
Rudder Lanyards, 2 — —	1½	2					
PINNACE.							
Hallyards Main and Fore, 2 —	1¼	10					
Sheets, 4 — — —	1¼	10					
Grapnel-Rope, cabled — —	3¼	35					
Painter — — —	3½	5					2
Sternfaſt — — worn	2	5					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
PINNACE CONTINUED.							
Slings, 2 Pair — —	5	5				4	6
Seizings, 2 — —	¾	10					
Rudder Lanyards, 2 — —	1	1					
YAWL OR CUTTER.							
Hallyards *(if Cutters)* 2 Pair —	2	12	Iron Trave		2		
Sheets, 4 — — —	2	8					
	1¼	8					
Grapnel-Rope, cabled —	3	80					
Painter — — —	3	10					4
Slings, 2 Pair — —	5	10				8	12
Seizings, 2 — —	1	20					
Rudder Lanyards, 2 — —	1	2					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 51, Article 2, by Gammonings, 2 —| 6 | 84 | is meant, Two Gammonings are neceſſary, made of Rope 6 Inches in Circumference, containing in the Whole 84 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
A SHIP OF 38 GUNS,
Being of 951 Tons Burthen.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	3	110					
Gammonings, 1	6	48					
Shrouds fine, 1 Pair	6	14	Hearts	9	2	2	2
Collars fine, 2	5	5	Hearts	9	2		
Seizings, 2	1	8					
Laſhings, 2	1¾	6					
Lanyards fine, 2	3	8½					
Bobſtays cabled fine 2 Pair	7	18	Hearts	9	2		
Collars fine 2	7	5½	Hearts	9	2		
Seizings, 2	1	16					
Laſhings, 2	1½	7					
Lanyards fine, 2	3	10					
Horſes, 2	3½	14½				6	
Straps, 2	3	3				4	
Lanyards, 2	1½	5					
SPRITSAIL.							
Horſes, 2	3	9½					
Stirrups, 6	2	5					6
Braces, 2	2⅞	65	Double	9	4		
Pendants, 2	3½	5	Single	9	4		
Strapping	3	9					
Lifts, 2	2⅞	47	Single	9	4		
Beckets, 2	3	3½					
Strapping	2½	3					
Seizing							
Standing, 2	3	7				4	
Straps, 2	3	3					
Lanyards, 2	1½	4					
Hallyard	2½	30	Long Tackle	18	1	1	1
			Single	9	1		
Strapping	3	2					
Seizing and Laſhing	¾	6					
Slings, 1 Pair	4	4					
Seizing and Racking	¾	8					
Clew-Lines, 2	2	33	Strap bound	8	4		
			Single	8	2		
Strapping	2½	4					
Buntlines, 2	2	24	Single	8	2		
Strapping	2	1					
Earings, 4	1	12					
Sheets cabled ſingle, 2	3½	34					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
JIBB.							
Horſes, 1	3½	15					
Seizings, 2	¼	of a Tar'Line					
Guy Pendants, 1 Pair	3	22	Single	11	2		
Falls, 2	2	24	Single	9	4		
Strapping	3	1½					
	2½	2					
Laſhers, 4	1	10					
Out-Haller	3	9					
Tackle-Fall	2	25	Single	7	2		
Strapping	2	1					
Stay	3½	26	Single	11	1		
Strapping	3½	1					
Tacklefall	2	21	Double	7	1		
			Single	7	1		
Strapping	2	1					
Hallyard	3	36½	Single	10	1		
Strapping	3	1					
Downhaller	2	31	Single	7	1		
Sheets ſingle, 2	3½	33	Single	10	2		
Pendants, 1 Pair			Single				
SPRITSAIL TOPSAIL.							
Horſes, 2	2	7					
Braces, 2	2	48	Single	7	2		
Strapping	2	1					
Lifts ſingle, 2	2	34	Single			2	
Strapping							
Hallyard	2	25	Single	7	2		
Strapping	2	2½					
Laſhing	¼	6					
Parrel-Ropes, 2	2	3	Parrel	10	1		
Clewlines, 2	1¾	41	Single	6	4		
Strapping	2	1½					
Lacing and Earings, 2	¾	30					
FORE-MAST.							
Woolding	21	215					
Girdlines, 2	3	60	Single	13	2		
Strapping	3	2					
Seizing	¾	6					
Laſhings, 2	1¾	15					

38 Gun Ship. 951 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Iron. Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 2 Pr.	9	14½	Sin. Coaked	17	2		8
Strapping —	5½	3					
Seizing — —	1	7	Double				
Runners of Tackles, 4 —	5½	31	Thin Coak	17	4		
Strapping —	5	6					
Falls of Tackles, 4 — —	3	148	Single	18	4	4	4
			Thin Coak.	12	4	2	2
Strapping —	5	8					
Seizing — —	¼	28					
Shrouds cabled fine, 7 Pair —	9	134	Dead Eyes	14	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1½	67					
End, 14 — —	1	67					
Lanyards fine, 14 — —	4	84					
Ratling — — —	1½	200					
Stay cabled fine 4 Strands —	13	12½	Heart	17	1		
Seizings, 3 — —	1½	15					
Lanyard fine — —	4½	9					
Collar cab. 4 Str. fine doub.	6½	6	Heart	17	1		
Seizings, 2 — —	1½	8					
Laſhing — —	2	5					
Preventer Stay cabled 4 Str. fine	8½	12½	Heart	12	1		
Lanyard fine —	3½	16					
Coll. cab. 4 Str. fine double —	4½	5	Heart	12	1		
Laſhing —	1½	5					
Seizings, 2 —	1½	12					
Catharpin Legs, 4 —	5	8					
Seizings, 8 —	1	32					
Crowfoot for the Top — —	1	85	Euphro	19	1		2
Tackle — —	1	6					
Strapping —	1	1					
Jeers { Tye — — — / Falls, 2 — — — }	5½	86	Doub. Coak.	18	4		
Strapping — — —	6½	16					
Seizing — — —	1	24					
Laſhing at the Maſt Head —	3½	32					
Yard — —	2	10					
Stoppers, 2 — —	4½	6					
Horſes, 2 — — — —	4½	12½					2
Stirrups, 6 — — —	3	10					6
Seizings, 4 — — —		½	of a Tar'Line				
Lanyard 1 — — —	2	3½					
Yard Tackle Pendants, 2 —	5½	7	Do. thin Co.	14	2		
			Dou. thin Co.	16	2	2	2
Falls, 2 — —	3	82	Single	11	2		
Strapping — —	4	7½					
Seizing — —	1	16					
Inner Tric. Lines, 2	2	33	Single	7	2		
Outer Tric. Lines, 2	1½	33	Single	6	4		
Strapping — —	2	6					
Braces, 2 — — —	3½	82	Single Coak.	12	4		
Pendants, 2 — —	4½	9	Single Coak.	12	2		
Preventer, 2 —	3½	10					
Strapping — — —	4	4					
Seizing — — —	¼	12					
Laſhing — — —	1½	18					
Preventers *(in War only)* 2	3	74	Single	11	4		

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks.	Iron. Thimbles.
FORE-MAST CONTINUED.							
Braces Preventer Strapping —	3	3					
Seizing — —							
Lifts, 2 — — — —	3½	90	Single	12	6		
Span for the Cap — —	4½	6½					
Short Span — — —	3½	2½					
Strapping — — —	4	4					
Seizing — — —	¼	14					
Jigger Tackle, No. 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping —	3	4					
Truſs Pendants, 2 — — —	6	14					4
Falls, 2 — — —	2½	44	Double	9	4	4	4
Strapping —	3	4					
Eye Seizings, 2 —	1	11					
Nave Line — —	1½	16	Single	6	1		
Puddening the Yard — worn	6	8					
Clew-garnets, 2 — — —	3	59	Sin. Strapbo.	11	4		
			Single	11	2		
Straps ab. the Yard	3	6					
Strapping — —	3	1½					
Seizing — —	¼	12					
Laſhing —	1	8					
Buntline Legs, 4 — — —	2½	42	Double	8	4		
Falls, 2 — — —	2½	42	Single	8	8		
Strapping — — —	2½	8					
Leechline Legs, 2 — — —	2	43	Double	7	4		
Falls, 2 — — —	2	43	Single	7	8		
Strapping — — —	2½	8					
Slablines, 2 — — —	2	30	Single	7	2		
Strapping — — —	2	1					
Bowlines, 2 — — — —	3½	48	Single	13	4		2
Bridles, 2 — — —	3½	4					
Strapping — — —	3½	4					
Seizing — — —	¼	9					
Laſhing — — —	2	8					
Earings, 6 — — — —	1½	26					
Sheets Cabled, 2 — — —	5	64	Sin. Coaked	17	2		2
Strapping — — —	5	3½					
Seizing — — —	1	12					
Stoppers, 2 — — —	4	4					
Tacks Taper and Cabled, 2 —	6½	34	Shouldered	16	2		
Strapping — — —	5	4½					
Seizing — — —	1	8					
Stoppers, 2 — — —	5	4½				2	2
Lanyards, 2 —	1½	4					
Gammoning the Bumkin, worn —	3½	13				2	6
Lanyards, 2 — — —	2½	8					
Lany. for Pudden & Dolphin —	1	8					4
Slings, 1 Pair — — —	9	7½					1
Strap — — —	9	3					1
Seizings, 2 — — —	1	14					
Lanyard — — —	2½	6					
Stayſail Hallyard — —	3	26½	Single	10	2		
Sheets, 2 — — —	2	23	Single	10	2		
Tack — — —	2	2					
Downhaller — —	2	23	Single	7	1		
Strapping — —	3	3½					
	2	2½					

38 Gun Ship. 951 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Studd. Sail Hallyard, Inner, 2 Pr.	2	43	Single	9	6		
Outer, 2 Pr.	2½	79	Single	9	4		
Sheets, 2 Pr.	2	12					
Tacks, 2 Pr.	2½	57	Single	9	2		
Strapping	2½	14					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair	4	5					2
Falls, 2	2	46	Double	9	2	2	2
			Single	9	2	2	2
Strapping	3	3½					
Shrouds fine 4 Pr.	5¼	56	Dead Eyes	8	8		
Seizings Eye, 4	¼	16					
Throat, 8	¼	49					
End, 8							
Lanyards fine, 8	2½	40					
Ratling	1	80					
Standing Backstays fine 3 Pr.	5¼	96	Dead Eyes	8	4		
Seizings Eye, 3	¼	12					
Throat, 6	¼	39					
End, 6							
Lanyards fine, 6	2¼	20					
Breast Backstay Runners, 2	3¼	8	Single	11	2		
Falls, 2	2½	18	Double	10	4		
Strapping	3	3					
Stay Cabled 4 Strands fine	6	18½					
Collar fine	5	3	Single	15	1		
Tackle	2½	20	Long Tackle	18	1		
			Single	10	1		
Strapping	3½	3					
Seizing	¼	8					
Preventer Stay cab. 4 Str. fine	4½	18½					
Collar, fine	4	3	Single	12	1		
Tackle	2	18	Long Tackle	16	1		
			Single	9	1		
Strapping	3	2½					
Seizing	¼	8					
Lashing the Col.	2	5½					
Shifting Backstays, fine, 1 Pair	5	30					2
Tackles 4 No.	2½	42	Double	10	4	4	4
			Single	10	4	4	4
Strapping	3½	6½					
Futtock Shrouds, fine, 4 Pair	5½	20	Plates with Dead Eyes	8	8	8	8
Seizing Upper, 8	¼	28					
Lower, 8	¼	24					
Ratling	1	26					
Top Rope Pendants, fine, 2	7	33	S. Brass Shiv. Iron Bound	20	2		2
Falls, 2	4	96	Treb. Ir. Bo. Coaked	15	4		
			Flat Side	16	2		
Tye	4½	37	Doub. Coak.	16	1		
Strapping	4½	6					
Seizing	1	10					
Lashers at the Mast Head, 2	2	9					
Yard	1½	4					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2	3	102	Do. thin Co.	19	2		
			Sin. Ditto	19	2	2	2
Strapping	4	7					
Seizing	¼	16					
Horses, 2	3½	10					
Stirrups, 6	3	7					6
Braces, 2	3	88	Single	10	4		
Pendants, 2	3½	8	Single	10	2		
Preventer, 2	3	9					
Strapping	3	5					
Lifts, 2	3	58	Double	20	2		
			Single	10	4		
Beckets, 2	3	2					
Strapping	3	6					
Seizing							
Parrel Ropes, 2	2½	9	Parrel	16	1		
Racking and Seizing	¼	15					
Clewlines, 2	3	73½	Sin. Str. bo.	10	4		
			Single	10	2		
Strapping	3	8					
Buntlines, 2	2½	55½	Single	9	4		
Strapping	2½	3					
Leechlines, 2	2	24	Single	7	2		
Strapping	2	1					
Bowlines, 2	2½	56	Single	9	2		2
Bridles, 4	2½	9					2
Strapping	2½	1½					
Lashing	1	10					
Reef tackle Pendants, 2	3	39	Double	7	4	2	2
Falls, 2	1½	45					
Strapping	2	2					
Earings, 10	1½	36					
Sheets, 2	5½	47	Sin. Shoul.	17	2		
			¼ do. th & thin	17	2		
Straps for Sheet Blocks, 2	6	4½					
Quarter Blocks, 2	4½	7					
Lashers for Quarter Blocks, 2	2	6					
Seizings, 2	1	18					
Span — worn	3	7					
Stoppers, 2	4½	4					
Slings, 1 Pair	4	8					
Stayfail Stay	3½	21	Single	11	1		
Tackle	2	15	Double	8	1		
			Single	7	1		
Hallyard	3	34½	Single	10	1		
Strapping	3	1½					
Sheets, 2	3	31	Single	10	2		
Strapping	3	1½					
Outhaller	2	16	Single	7	1		
Downhaller	2	25	Single	7	1		
Strapping	2	1½					
Studdingsail Hallyards, 2 Pair	3	89	Single	10	6		
Sheets, 2 Pair	2½	43	Single	10	2		
Tacks, 2 Pair	3	63	Single	10	2		
Downhallers, 2	1½	54	Single	6	2		2
Boom Tackles, 2	2	70	Double	7	2		
			Single	7	4		
Tails and Straps, 2	2	16					
	2	5½					

38 Gun Ship. 951 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	3	64					12
Lanyards, 6 — — —	1½	12					
Standing Backſtays, 2 Pair —	3	74	Dead Eyes	6	4		
Lanyards, 4 — — —	1½	20					
Stay cabled 4 Strands — —	3½	26	Single	10	1		
Strapping — — —	3½	1					
Tackle — — —			Double				
			Single				
Strapping — —							
Flagſtaff Stay — —							1
Hallyards, 1 Pair — —	1	25					
Tye — — — — —	3	14	Double	6	1		
Hallyard — —	1½	26	Single	6	2		
Strapping — — —	2	1½					
Horſes, 2 — — — —	2½	7					
Braces, 2 — — — — —	1½	87	Single	6	4		2
Pendants, 2 — — —	2	8	Single	6	2		
Strapping — — —	2	3					
Lifts ſingle, 2 — — — —	2½	38					2
Strapping — — —							
Parrel Ropes, 2 — — —	1½	3	Parrel	8	1		
Clewlines, 2 — — —	1½	57	Single	6	6		
Strapping — — —	2	2½					
Bowlines, 2 — — — —	1½	63	Single				6
Bridles, 2 — — —	1½	3					
Strapping — — —							
Earings, 2 No. — — — —		1½	Tarr'd Lines				
Shifting Backſtays, 1 Pair —	3	37½					2
Tackles, 2 No. —	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping — —	2	1½					
Studdingſail Hallyards, 2 Pair —	1½	69	Single	6	6		
Sheets, 1 Pair — —	1	18					
Tacks, 2 Pair — —	1½	43	Single	6	4		
Downhallers, 2 No. — —	1	16					1
Strapping — — —	1¼	8					
MAIN-MAST.							
Woolding — — —	2½	230					
Girdlines, 2 — — —	3½	66	Single	13	2		
Strapping — — —	3	2					
Seizing — — —	¾	6					
Laſhings, 2 — — —	1½	15					
Pendants of Tack. cab. fine, 2 Pr.	9	15½	Sin. Coak.	17	2		8
Strapping —	5½	3					
Seizing — —	1	8					
Runners of Tackles, 4 — —	5½	32	Do. thin Co.	17	4		
Strapping — —	5	6					
Falls of Tackles, 4 — — —	3½	163	Sin. thin Co.	18	4	4	4
Strapping — —	5	8					
Seizing — —	¾	20					
Shrouds cabled, fine, 7 Pair —	9	150	Dead Eyes	14	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1½	67					
End 14 — — —	1	67					
Lanyards, fine, 14 — —	4	84					
Ratling — — — —	1½	246					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Stay cabled 4 Strands, fine —	14	18½	Heart	19	1		
Seizings, 4 — — —	1½	20					
Lanyard, fine — —	4½	14					
Collar cabled 4 Strands, fine	9½	7	Heart	19	1		
Worming — —	1½	32					
Seizings, 3 — —	1½	16					
Laſhing — — worn	3	15					
Preventer Stay cab. 4 Strands fine	9½	15	Heart	14	1		
Lanyard, fine —	3	8					
Col. cab. 4 ſtr. fine. do.	5	5	Heart	14	1		
Laſhing — —	2	5					
Seizings, 3 — —	1	16					
Catharpin Legs, 4 — — —	5	9					
Seizings, 8 — —	1	32					
Stay Tackle Pendant — —	5½	4½	Do. thin Co.	14	1		
			S. thin Co.	16	1	1	1
Fall — — —	3	36		12	1	1	1
Strapping — —	4	3					
Seizing — —	¼	12					
Laſhing — —	1½	10					
			Do. thin Co.	14	1		
Fore-Stay Tackle Fall — —	3	38	S. thin Co.	16	1	1	1
				12	1	1	1
Strapping —	4	3					
Seizing —	¾	12					
Crowfoot for the Top — —	1	80	Euphro	22	1		2
Tackle — — —	1	7					
Strapping — —	1	1					
Jeers { Tye — — —	6	94	Doub. Coak.	19	4		
Jeers { Falls, 2 — — —							
Strapping — — —	6½	18					
Seizing — — — —	1	24					
Laſhers to the Maſt Head, 2	3½	32					
Yard — —	2	12					
Stoppers, 2 — — —	4½	6					
Horſes, 2 — — —	4½	14					2
Stirrups, 6 — — —	3	11					
Seizings, 4 — — —		½	of a Tar'd Line				
Lanyard — — —	2	3½					
Yard Tackle Pendants, 2 —	5½	8	Do. thin Co.	14	2		
			S. thin Co.	16	2	2	2
Falls, 2 — — —	3	83	Single	12	2		
Strapping — —	4	7½					
Seizing — —	¾	13					
Inner Tricing-Lines, 2	2	36	Single	7	2		
Outer Tricing-Lines, 2	1½	36	Single	6	4		
Strapping — —	2	6					
Braces, 2 — — —	3½	78	Sin. Coak.	12	2		
Pendants, 2 — —	4½	9	Sin. Coak.	12	2		
Preventer, 2 — —	3½	10					
Strapping — —	4	3					
Seizing — — —	¾	12					
Preventers *(in War only)* 2	3	70	Single	11	4		
Strapping — —	3	3					
Seizing — — —							
Lifts, 2 — — — —	3½	99	Single	12	6		
Span for the Cap — —	5	7					
Short Span — —	3½	2					

38 Gun Ship. 951 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — — —	4	4					
Seizing — — —	1¼	14					
Jigger Tackles, 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping — —	3	4					
Truſs Pendants, 2 — —	6	15					4
Falls, 2 — — —	2½	53	Double	9	4	4	4
Strapping — —	3	4					
Eye Seizings, 2 —	1	11					
Nave-Line — — —	1¾	16	Single	6	1		
Puddening the Yard — worn	6	8					
Clewgarnets, 2 — — —	3	67	Strapbound	12	4		
			Single	12	2		
Strap about the Yard —	3	7					
Strapping — —	3	1½					
Seizing — — —							
Laſhing — — —	1	8					
Buntline Legs, 4 — —	2½	42	Double	8	2		
Falls, 2 — — —	2½	47	Single	8	10		
Strapping — —	3	10					
Leechline Legs, 2 — —	2	46	Double	7	4		
Falls, 2 — — —	2	46	Single	7	10		
Strapping — —	3	10					
Slablines, 2 — — —	2	36	Single	7	2		
Strapping — —	2	1					
Bowlines, 2 — — —	3½	48	Double	14	1		4
Bridles, 4 — —	3½	12					2
Strapping — —	3	3½					
Seizing — — —	¾	4					
Laſhing — — —	2	4					
Tackle — —	2	12	Long Tackle	14	1	1	1
			Single	8	1	1	1
Strapping — —	2½	2					
Earings, 6 — —	1½	28					
Sheets, cabled, 2 — —	5½	74	Sin. Coak.	17	4		4
Strapping — —	5½	7½					
Seizing — — —	1	15					
Laſhers, 2 — — —	2	6					
Stoppers, 2 — — —	4½	4					
Tacks Taper and Cabled, 2 —	7	37					
Stoppers, 2 — — —	4½	4				2	2
Lanyards, 2 — —	1½	5					
Lany. for the Pudden & Dolphin —	1	8					4
Slings, 1 Pair — — —	9	8½					1
Strap — — — —	9	3					1
Seizing — — —	1	15					
Lanyard — — —	2½	6					
Quarter Tackle Pendants, 2 —	5	9	Do. thin Co.	14	2		
Falls, 2 — —	3	72	S. thin Co.	16	2	2	2
			———	12	2	2	2
Strapping — —	4	7					
Seizings, 3 — —	¼	13					
Luff Tackles, 4 No. — —	3	120	Double	12	4	4	4
			Single	12	4	4	4
Strapping — —	3½	8					
Seizing — — —	¾	20					
Stayſail Stay — — — worn	3½	11					2
Collar — — —	3	2					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayſail Collar Seizing — —	¾	6					
Lanyard — —	1¼	4					
Hallyard, 1 — — —	3	31	Single	10	3	1	1
Sheets, 2 — — —	3	11	Single	10	2	1	1
Tacks, 2 — — —	3	4					
Downhaller — — —	2	17	Single	8	1		
Strapping — — —	3	3					
	2½	1½					
Studd. ſail Hallyards, Inn. 2 Pr.	2½	50	Single	9	6		
Outer, 2 Pr. —	2½	86	Single	9	4		
Sheets, 2 Pair — —	2	24					
Tacks, 2 Pair — —	2½	46	Single	9	2		
Strapping — — —	2½	16					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	4	6					2
Falls, 2 — — —	2	56	Double	9	2	2	2
			Single	9	2	2	2
Strapping — — —	3	4					
Shrouds, fine, 4 Pair — —	5½	70	Dead Eyes	8	8		
Seizings Eye, 4 — —	¾	16					
Throat, 8 — —							
End, 8 — — —	¾	49					
Lanyards, fine, 8 — —	2½	40					
Ratling — — —	1	92					
Standing Backſtays, fine, 3 Pr. —	5½	106	Dead Eyes	8	4		
Seizings Eye, 3 —	¾	12					
Throat, 6 —	¾	39					
End, 6 —							
Lanyards, fine, 6	2½	20					
Breaſt Backſtay Runners, 2 —	3½	8	Single	11	2		
Falls, 2 — — —	2½	18	Double	9	4		
Strapping — —	3	2½					
Stay Cabled 4 Strands, fine —	6	20					
Collar, fine — — —	5	3	Single	15	1		
Tackle — — —	2½	18	Long Tackle	16	1		
			Single	9	1	1	1
Strapping — — —	3½	3					
Seizing — — —	¾	12					
Laſhing — — —	2	6					
Preventer Stay, Cabled 4 ſtr. fine	4½	19					
Collar, fine —	3½	2½	Single	11	1		
Tackle — — —	2	16	Long Tackle	16	1		
			Single	9	1	1	1
Strapping — —	3	3					
Seizing — —	¾	8					
Laſhing the Col. —	1½	6					
Shifting Backſtays, fine, 1 Pair —	5½	34					2
Tackles, 4 No. —	2½	4	Double	10	4	4	4
			Single	10	4	4	4
Strapping — —	3½	6					
Futtock Shrouds, fine, 4 Pair —	5½	24	Pla with D.E.	8	8	8	8
Seizings Upper, 8 —	¾	28					
Lower, 8 —	¾	24					
Ratling — —	1	26					
Top Rope Pendants, fine, 2	7	35	Sin. I. bound	20	2		2
			Braſs Shiv.				

38 Gun Ship. 951 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2 — —	4	98	Treb. I. bo.	15	4		
Tye — — — —	4½	38	Flat Side	17	2		
			Double	17	1		
Strapping — —	4½	6					
Seizing — —	1	10					
Laſhers at the Maſt Head, 2	2	10					
Yard — —	1½	4					
Hallyards, 2 — — —	3	121	Do. thin Co.	19	2		
			S. thin Co.	19	2	2	2
Strapping — —	4½	6					
Seizing — —	2½	15					
Horſes, 2 — — —	3½	11					
Stirrups, 6 — —	3	7½					6
Braces, 2 — — —	3	67	Single	10	2		
Pendants, 2 — —	3½	8	Single	10	2		
Preventers, 2 —	3	9					
Span ab. the Mizen Maſt —	4½	4½					
Strapping — —	3	3					
Lifts, 2 — — — —	3	64	Double	20	2		
			Single	10	4		
Beckets, 2 — —	3	2½					
Strapping — —	3	6					
Seizing — —							
Parrel Ropes, 2 — —	2½	9	Parrel	18	1		
Racking and Seizing	2½	16					
Clew-lines, 2 — — —	3	84	Sin. Str. Bo.	10	4		
			Single	10	2		
Strapping — —	3	7					
Bunt-lines, 2 — — —	2½	61	Single	8	4		
Strapping — —	2½	3					
Leech-lines, 2 — — —	2	27	Single	7	2		
Strapping — —	2	1					
Bowlines, 2 — — —	3	59	Single	11	2		2
Bridles, 4 — —	3	14					4
Strapping — —	3½	1½					
Seizing — —							
Frapping and Laſhing	1½	10					
Reeftackle Pendants, 2 —	3	42	Double	7	4	2	2
Falls, 2 — — —	1½	60					
Strapping — —	2	2					
Earings, 10 — — —	1½	38					
Sheets, 2 — — — —	6	53	Sin. Shoul.	17	2		
			¼ Double Thick & thin	17	2		
Straps for Sheet Blocks, 2 —	6½	4					
Quarter Blocks, 2	4½	7					
Laſhers for Quart. Blocks, 2	2	7					
Seizings, 2 — —	1	4					
Span — — — worn	3	7					
Stoppers, 2 — —	4½	4					
Slings, 1 Pair — —	4	9					
Stayſail Hallyard — —	3	37½	Single	10	1		
Strapping —	3	1					
Sheets, 2 — — —	2½	32	Single	10	2		
Strapping —	3	1½					
Pendant —	4	8	Single				
Tack — — —	3	4					
Downhaller — —	2	22	Single	8	2		
Strapping — —	1½	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2 — — —	1½	35	Single	6	2		2
Middle Stayſail Stay — —	3	21	Single	10	1		
Tackle —	2	18	Double	8	1		
			Single	8	1		
Hallyard — —	2½	36	Single	9	1		
Sheets, 2 — —	2½	36	Single	9	2		
Tack — — —	2	4					
Downhaller — —	2	25	Single	8	2		
Strapping — —	2½	6					
Tricing-line —			Single	8	1		
Studdingſail Hallyards, 2 Pair	3	94	Single	10	6		
Sheets, 2 Pair — —	2½	44	Single	10	2		
Tacks, 2 Pair — —	3	62	Single	10	4		
Downhallers, No. 2 — —	1½	56	Single	6	2		6
Boom Tackles, 2 No. —	2	70	Double	8	2		
			Single	8	4		
Laſh. for Booms — worn	2½	20					
Tailing and Strapping —	3	16					
	2½	5					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair — — —	3	70					12
Lanyards, 6 — —	1½	12					
Standing Backſtays, 2 Pair	3	82½	Dead Eyes	6	4		
Lanyards, 4 —	1½	16					
Stay cabled 4 Strands —	3½	21	Single	11	1		
Strapping — —	3	1					
Flagſtaff Stay — —							
Hallyards, 1 Pair —	1	24					
Tye — — —	3	15½					
Hallyard — — —	1½	36	Double	7	1		
			Single	7	2		
Strapping — —	2	1½					
Horſes, 2 — — —	2½	8					
Braces, 2 — — —	1½	70	Single	6	2		
Pendants, 2 — —	2	8	Single	7	2		
Strapping — —	2	3					
Lifts ſingle, 2 — —	2½	40	Single				2
Strapping — —							
Parrel Ropes, 2 — —	1½	3	Parrel	9	1		
Clewlines, 2 — —	1½	64	Single	6	6		
Strapping — —	1½	3					
Bowlines, 2 — — —	1½	62	Single	6	2		2
Bridles, 4 — —	1½	6					2
Strapping — —	1½	1					
Earings, 4 — —		½	of a Tar'Line				
Shifting Backſtays, 1 Pair	3	4					1
Tackles, 2 No. —	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping —	2	1½					
Stayſail Stay — —	2½	30	Single	8	1		
Hallyard — —	2	39	Single	7	1		
Sheets, 2 — —	2	39	Single	7	2		
Tack — — —	1½	6					
Downhaller — — —	1½	27	Single	6	2		
Strapping — —	2	2½					

38 Gun Ship. 951 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingsail Hallyards, 2 Pair	2	72	Single	7	6		
Sheets, 2 Pair	1½	37					
Tacks, 2 Pair	2	46	Single	7	4		
Downhallers, 2	1	35					2
Strapping	2	8					
MIZEN-MAST.							
Woolding	2½	85					
Girdlines, 2	3	58	Single	11	2		
Strapping	3	1½					
Seizing							
Lashings, 2	1½	8					
Burton Pendants, 1 Pair	4	6½					2
Falls, 2	2½	54	Double	9	2	2	2
			Single	9	2	2	2
Strapping	3	3					
Shrouds, fine, 5 Pair	5½	87	Dead Eyes	8	10		
Seizings Eye, 5	1	20					
Throat, 10	¼	58					
End, 10							
Lanyards, fine, 10	2½	50					
Ratling	1	100					
Stay Cabled 4 Strands, fine	6	13½					2
Seizings, 3	1	8					
Lanyard, fine	3	5					
Collar, fine	5	3					1
Seizing	1	3					
Lashing	1½	3					
Crowfoot for the Top	1	50	Euphro	15	1		2
Tackle	1¼	5					
Strapping	1½	1					
Jeers, 1 Pair	4	38	Treble Co.	16	1		
			Double Co.	16	1		
Strapping	4	6					
Seizing	1	9					
Lashing at the Mast Head	2½	10					
Yard	2	6					
Derrick	3½	38	Double	12	1		
Span	3½	3	Single	12	1		1
Strapping	3½	2					
Seizing	¾	10					
Lashing	1¾	8					
Vang Pendants, 2	3½	11					
Falls, 2	2	30	Single	8	4	2	2
Strapping	2½	1					
Bowlines, 2	2½	20	Single	9	4		2
Strapping	2½	2					
Truss Pendant	3	5½					2
Falls	2	20	Long Tack.	15	1	1	1
			Single	8	1	1	1
Strapping	2½	3					
Seizing							
Brails Peek Legs, 2 Pr.	2	12					
Falls	2	20	Single	6	4		2
Middle	2	23	Single	7	2		
Throat	2¼	25	Single	9	2		
Middle	2	22	Single	7	2		
Foot	2	18	Single	7	2		2

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping	2½	8					
Lacing Mizen to Yard	1½	26					
Mast worn	2½	20					
Earings, 2	1½	10					
Peek Hallyards, 1 Pair	1½	23	Single	6	1		1
			Double	11	1		1
Sheet	3	24	Single	11	1		
Strapping	3	3					
Seizing							
Tack	2	3					
Slings, 1 Pair	4	6					
Stayfail Stay worn	4	14					2
Collar	3½	3					1
Seizing							
Lashing	¾	3					
Lanyard	1½	6					
Hallyard	2½	29	Single	8	3		
Sheets, 2	2½	13	Single	8	2		1
Tack	2½	2½					
Downhaller	1½	19	Single	6	2		
Strapping	2½	5					
Brails, 2	2	27	Single	7	2		2
Driver Hallyards, 2 Pair	2½	38	Single	9	4	1	2
Sheets, 2	2½	17	Single	9	2		
Tacks, 2	2½	22	Single	9	2		
Downhaller	1½	19	Single	6	1		
Strapping	2	6					
Lashing	¾	12					
CROSS-JACK-YARD.							
Span about the Cap	3	2					
Braces, 2	2	52	Single	8	2		
Pendants, 2	2½	5	Single	8	2		
Preventer, 2							
Strapping	2	2					
Lifts Running, 2	2	51	Single	8	4		
Strapping	2	2					
Slings, 1 Pair	3½	4½	Sin. do. Scord	12	1		
Strapping	3	2					
Seizing	¾	3					
Lashing	1	5					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	3½	36	Dead Eyes	6	6	6	6
Seizings, 6		1½	Tarr'd Lines				
Lanyards, fine, 6	2	24					
Ratling	1	54					
Standing Backstays, fine, 1 Pair	3½	26½	Dead Eyes	6	2		
Seizings, 4		½	of a Tar'd Line				
Lanyards, fine, 2	2	8					
Stay cabled, 4 Strands, fine	4	12½					
Lanyard, fine	2	5					2
Collar	3	2	Single	12	1		
Seizing and Lashing	¼	6					
Flag-staff Stay							
Hallyards, 1 Pair	1	16					
Shifting Backstays, fine, 1 No.	3½	13					1

38 Gun Ship. 951 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backſtay Tackle	2	12	Double	7	1	1	1
			Single	7	1	1	1
Strapping	2½	4					
Futtock Shrouds, fine, 3 Pr.	3½	10	Plates with Dead Eyes	6	6	6	6
Seizings, 6		1	Tar'd-Lines				
Ratling	1	11					
Top Rope Pendants, fine, 2	4½	15	Single I. bo.	12	1		1
Falls, 2	2½	37	Double D°	10	2		
Tye	3½	12	Sin. do. Scord	12	1		
			Double thin	10	1		
Hallyard	2	42	Single thin	10	1	1	1
Strapping	3	3					
Laſhing	¾	3					
Horſes, 2	2½	8					
Stirrups, 4	2	4					4
Braces, 2	2	46	Single	7	2		
Pendants, 2	2½	3½	Single	7	2		
Strapping	2	1½					
Lifts, 2	2	49	Single	7	4		
Strapping	2½	3					
Parrel Ropes, 2	2	4	Parrel	11	1		
			Strap bound	7	4		
Clew-lines, 2	2	60	Single	7	2		
Strapping	2	1½					
Buntline 2	1½	42	Single	6	2		
Strapping	1½	1					
Leechlines, 2			Single				
Strapping							
Bow-lines, 2	1½	39	Single	6	2		2
Bridles, 4	1½	6					2
Strapping	1½	1					
Reef Tackle Pendants, 4							
Falls, 2							
Strapping							
Earings, 6	1	27					
Sheets, 2	3½	35	Sin. Should.	11	2		
			Double	11	1		
Strapping	4	2					
	3	2½					
Seizing							
Laſhing	1	4					
Stayſail Hallyard	2	36	Single	7	1		
Sheets, 2	2	26	Single	7	2		
Tacks, 2	2	3					
Downhaller	1	16	Single	5	1		
Strapping	2	1½					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	2	39					8
Lanyards, 4	1	10					
Backſtays, 1 Pair	2	36					4
Lanyards, 2	1	6					
Stay	2½	11					1
Lanyard	1	3					
Tye	2	5½					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1½	28	Single	5	2		
Horſes, 2	2	5					
Braces, 2	1½	47	Single	5	2		
Lifts, ſingle, 2	2	29					
Parrel Ropes, 2	1	3	Parrel	6	1		
Clew-lines, 2	1½	44	Single	5	2		
Bow-lines, 2	1½	44					
Bridles, 4	1	3					4
Earings, 2		1	Tarr'd-Line				
Strapping	1½	3					
NECESSARY ROPES.							
Viol Cabled	10	44	Single Coak.	42	1		
Strapping							
Seizing							
Laſhing	3	9					
Winding Tackle Pendant	9½	12	Co. Fourfold	18	1		
Fall	3½	46	Treble	18	1		
			Single	18	1		
Strapping	6	12					
Seizing	1½	14					
Catt Falls, 2	4	74	Treble I. bo. Braſs Shiv.	18	2		
Lanyards, 2	2	20	Single	8	2		4
Stoppers 2 No.	3½	3					
Guy's Maſt-Head, 2	7	26					
Fore, 2	7	16					
After, 2	4	18					
Fiſh Tackle Pendant	7	9½	Single	20	1	Fiſh 1	1
			Coaked				
Fall	3½	40	Long Tack.	32	2		
Strapping	4½	9					
Seizing	1	16					
Lanyard	2½	14					
Anchor Stock Tackle fall	2½	22	Double	9	1	1	1
			Single	9	1	1	1
Bill Pendant	4½	8½				1	2
Strapping	3	2					
Seizing							
Stoppers Sheet Anchor, 2	6½	7					
Beſt Bower, 2	6½	7					
Small Bower, 2	6½	7					
Spare, 2	6½	7					
Seizings	¾	28					
Wing cabled, 2 No.	6	14					
Dog, 2 No.	6	14					
Seizing	¾	26					
Stream Anchor, 2	4	6					
Kedge, 2	3	4					
Deck & Bit, cabled, 10 No.	8½	30					10
Lanyards, 10 No.	2½	42					
Seizing	1½	34					
	1	34					

38 Gun Ship. 951 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	7	15					
Ditto — — — —	6½	15					
Ditto — — —	6	18					
Ditto — — —	5½	18					
Ditto — — — —	5	6					
Ditto — — — —	4	10					
Ditto — — —	3½	12					
Ditto — — (none.)							
Ditto — (none.)							
Shank painters Sh. Anchor cab.	5½	9					
Beſt Bower, 2 —	5½	6				1	
Small Bower, 2 —	5½	6				1	
Spare, Cabled, 2 —	5½	9					
Seizing —		16					
Ropes Buoy Sheet Anchor cabled	5½	24					
Beſt Bower Cabled —	5½	24					
Small Bower Cabled —	5½	24					
Seizing —	¼	17					
Stream Anch. Cabled —	3	30					
Kedge Cabled — —	3	30					
Davit, 2 — — — worn	2½	8					
Bell — — — —	2½	2				1	
Buckets — — —		70	Coil Laſhing				
Swab, 2 — worn	3	20	Single	10	2		
Entering, 6 — —	3	18					
Paſſing — — —	4	50				2	
Lanyard — —	2½	11					
Slip — — — —	3½	30					
Quarters, Poop and Stantion in the Waſte, — —	3	100					
Fore, Main & Mizen Tops		1	Coil Laſhing				
Wheel or Tiller White —	3½	23	Single	11	2	2	
Strapping — —	3	1½					
Seizing — —							
Puddening of Anchors, worn	3	100	Old Canvas.	yd			
	2	30		16			
Seizings,	1	70					
Slings Buoy, 4 Pair — —	3½	48				6	
Lanyards, 3 — worn	2½	12					
Seizings, 6 —		2	Tarr'd Lines				
Gun — — —	6	6½					
Nut — — —	4½	3½					
But, 4 Pair — —	5	20				4	
Hogſhead, 4 Pair — —	4	16				4	
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys — worn	3½	5					
Swabs — worn	3½	16					
Cable Bends, 6 — —	2	60					
Rudder Pendants, cabled, 2 —	5	8				4	
Lanyards, 2 —							
Falls, 2 — — —	2½	42	Long Tackle Single	24 / 12	2 / 2	2 / 2	2 / 2
Strapping — —	4	5					
Seizing — — —	½	12					
Stern Ladders, 4 Strands, 2 worn	4	18					
Middle Rope, 2 worn	1½	14					
Laſhing — worn	1	9					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 — —	5½ / 3½	6 / 2					
Swifters for Capſton-Bars —	2	54					
Laſhing-Cables between Decks, Sheep-Pens, Steep-Tubs, Tubs in the Tops, & Booms		2½	Coils Laſhing				
Nettings for the Quart. Waſte, Tops, and Barricadoes —	1	660					
Hallyard for Top Lanthorn —							
Enſigns —	1	30					
Jacks —	¼	10					
For Colours: Head Line —		2	White-lines				
For Colours: Rope Bands —		4 lb	Marlines				
For Colours: Pendant Slings —	¼	22					
Awnings Ridge and Side Rope —	3	100	Single	10	3		
Stops — —	1	30					
Crowfeet — —	1	120	Euphro	26	1		
				16	1		
				14	1		
Hallyard — —	1½	36					
Ridge Tackle Fall —	2½	10	Double	8	1		
			Single	8	1		
For different Uſes of the Ship			Snatch Iron	17	4	4	4
			Bo. Hooks	13	4	4	4
			Coaked	12	4	4	4
Strapping — —	4	8					
Seizing — —							
LONGBOAT.							
Burton Pendants, 1 Pair — —	3½	3	Single	9	2		2
Runner — —	2½	10					
Falls, 2 — —	2	14	Double	8	2	2	2
			Single	8	2	2	2
Strapping — —	2½	2½					
Shrouds, 2 Pair — —	3	16					4
Lanyards, 4 — —	1	8					
Stay — — — —	3½	5					1
Lanyard — —	1	2					
Tye — — — —			Single				
Main Hallyard — —	1½	15	Single	6	1		
Outer Hallyard — —	1½	17	Doub. I. bo.	6	1		
			Single	6	1		1
Sheet — — — —	1½	10	Double	6	2		
			Single	6	2		1
Wood Hoops, 10							
Downhaller — —	1	13	Single	5	1		
Strapping — —	1½	7					
Topping Lift — —	1½	14					
Fore Hallyard — —	2	12	Single	7	1		
Sheet — — —	2	4					2
Tack — — —	1	1					
Bowline — —	2	1½					
Jib Hallyards — —	2	12	Single	7	1		
Sheet — — —	2	8					
Outhaller — —	2	9	Iron Trave		1		
Innhaller — —	1	6					
Boat-Rope, cabled — —	6	30					
Lanyard — —	2	2					

38 Gun Ship. 951 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	2	30					
Grapnel-Rope, cabled — —	3	45					
Painter — — — —	3	6					
Sternfaſt — — worn	3	12					
Fenders, cabled, 6 — worn	4	10					
Lanyards, 6 — —	1	10					
Rudder Lanyards, 2 — —	1	12					
PINNACE.							
Hallyards Main and Fore, 2 —	1	10					
Sheets, 4 — — —	1	10					
Grapnel-Rope, cabled — —	3	35					
Painter — — —	3	5					2
Sternfaſt — — worn	2	5					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5	5				4	6
Seizings, — —	¾	10					
Rudder Lanyards, 2 — —	1	1					
YAWL or CUTTER.							
Hallyards *(if Cutters)* 2 Pair —	1	6	Iron Trave		2		
Sheets, 4 — — —	2	4					
	1½	14					
Grapnel-Rope, cabled —	3	40					
Painter — — —	3	5					
Slings, 2 Pair — —	5	5				8	2 4
Seizings, 2 — —	1	10					
Rudder Lanyards, 2 — —	1	1					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 61, Article 2, by Gammoning, 1 —| 6 | 48 | is meant, One Gammoning are neceſſary, made of Rope 6 Inches in Circumference, containing in the Whole 48 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
A SHIP OF 36 GUNS,
Being of 871 Tons Burthen.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding — — —	3	100					
Gammonings, 1 — — —	6	48					
Shrouds fine, 1 Pair — —	6	14	Hearts	9	2	2	2
Collars fine, 2 — —	5	5	Hearts	9	2		
Seizings, 2 — — —	1	8					
Lashings, 2 — — —	1¼	6					
Lanyards fine, 2 — —	2½	8					
Bobstays cabled fine 2 Pair —	7	17	Hearts	9	2		
Collars fine 2 — —	7	5	Hearts	9	2		
Seizings, 2 — —	1	16					
Lashings, 2 — —	1½	6					
Lanyards fine, 2 — —	3	10					
Horses, 2 — — —	3½	14				6	
Straps, 2 — — —	3	3				4	
Lanyards, 2 — —	1½	5					
SPRITSAIL.							
Horses, 2 — — —	3	9					
Stirrups, 6 — —	2	5				6	
Braces, 2 — — —	2½	64	Double	9	4		
Pendants, 2 — —	3	5	Single	9	4		
Strapping — —	3	9					
Lifts, 2 — — —	2¾	44	Single	9	4		
Beckets, 2 — — —	3¼	3½					
Strapping — —	2½	3					
Seizing — — —							
Standing, 2 — — —	3	7				4	
Straps, 2 — —	3	3					
Lanyards, 2 — —	1½	4					
Hallyard — — —	2½	28	Long Tackle	18	1	1	1
			Single	9	1		
Strapping — —	3	2					
Seizing and Lashing —	¾	6					
Slings, 1 Pair — —	4¼	4					
Seizing and Racking —	¾	8					
Clew-Lines, 2 — — —	2	32	Strap bound	8	4		
			Single	8	2		
Strapping — —	2¾	4					
Buntlines, 2 — — —	2	24	Single	8	2		
Strapping — —	2	1					
Earings, 4 — — —	1	12					
Sheets cabled fingle, 2 — —	3½	30					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
JIBB.							
Horses, 1 — — —	3½	15					
Seizings, 2 — —	½		of a Tar'Line				
Guy Pendants, 1 Pair —	3½	22	Single	11	2		
Falls, 2 — —	2½	24	Single	9	4		
Strapping — — —	3½	1½					
	2½	2					
Lashers, 4 — —	1	10					
Out-Haller — —	3	9					
Tackle-Fall —	2	25	Single	7	2		
Strapping — —	2	1					
Stay — — —	3½	26	Single	11	1		
Strapping —	3½	1					
Tacklefall — —	2¾	22	Double	7	1		
			Single	7	1		
Strapping — —	2	1					
Hallyard — —	3	35	Single	10	1		
Strapping — —	3	1					
Downhaller — —	2	30	Single	7	1		
Sheets fingle, 2 — —	2½	32	Single	10	2		
Pendants, 1 Pair —			Single				
SPRITSAIL TOPSAIL.							
Horses, 2 — — —	2	7					
Braces, 2 — — —	2	45	Single	7	2		
Strapping — —	2	1					
Lifts fingle, 2 — —	2	34	Single				2
Strapping — —							
Hallyard — —	2	24	Single	7	2		
Strapping — —	2	2½					
Lashing — —	¾	6					
Parrel-Ropes, 2 — —	2	3	Parrel	10	1		
Clewlines, 2 — —	1¾	40	Single	6	4		
Strapping — —	2¼	1½					
Lacing and Earings, 2 —	¾	30					
FORE-MAST.							
Woolding — —	2¼	215					
Girdlines, 2 — —	3¼	54	Single	13	2		
Strapping — —	3¼	2					
Seizing — —	¾	6					
Lashings, 2 — —	1½	15					

36 Gun Ship. 871 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Iron. Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 2 Pr.	8 1/2	14 1/2	Sin. Coaked	17	2		8
Strapping — —	5 1/2	3					
Seizing — —	1	7	Double				
Runners of Tackles, 4 —	5 1/2	28	Thin Coak	17	4		
Strapping — —	5	6					
Falls of Tackles, 4 — —	3	148	Single	18	4	4	4
			Thin Coak.	12	4	2	2
Strapping —	5	8					
Seizing — —	3/4	28					
Shrouds cabled fine, 7 Pair	8 1/2	132	Dead Eyes	14	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1 1/2	67					
End, 14 — —	1	67					
Lanyards fine, 14 — —	4	84					
Ratling — — —	1 1/2	200					
Stay cabled fine 4 Strands —	13	11 1/2	Heart	17	1		
Seizings, 3 — —	1 1/2	15					
Lanyard fine — —	4 1/2	9					
Collar cab. 4 Str. fine doub.	6 1/2	5 1/2	Heart	17	1		
Seizings, 2 — —	1 1/2	8					
Laſhing — —	2	5					
Preventer Stay cabled 4 Str. fine	8 1/2	11 1/2	Heart	12	1		
Lanyard fine —	3 1/2	6					
Coll. cab. 4 Str. fine double —	4 1/2	5	Heart	12	1		
Laſhing —	1 1/2	5					
Seizings, 2 —	1 1/2	12					
Catharpin Legs, 4 — —	5	8					
Seizings, 8 —	1	32					
Crowfoot for the Top — —	1	80	Euphro	19	1		
Tackle — —	1	6					
Strapping	1	1					
Jeers { Tye — — — } Falls, 2 — —	5 1/2	80	Doub. Coak.	18	4		
Strapping — — —	6 1/2	16					
Seizing — — —	1	24					
Laſhing at the Maſt Head —	3 1/2	32					
Yard — —	2	10					
Stoppers, 2 — —	4	6					
Horſes, 2 — — — —	4 1/2	13					2
Stirrups, 6 — — —	3	10					6
Seizings, 4 — — —		1 1/2	of a Tar'Line				
Lanyard 1 — — —	2	3 1/2					
Yard Tackle Pendants, 2 —	5 1/2	7	Do. thin Co.	14	2		
Falls, 2 — —	3	76	Dou. thin Co.	16	2	2	2
			Single	11	2		
Strapping — —	4	7 1/2					
Seizing — —	1	16					
Inner Tric. Lines, 2	2	32	Single	7	2		
Outer Tric. Lines, 2	1 1/2	32	Single	6	4		
Strapping — —	2	6					
Braces, 2 — — —	3 1/2	80	Single Coak.	12	4		
Pendants, 2 — —	4 1/2	9	Single Coak.	12	2		
Preventer, 2 —	3 1/2	10					
Strapping — — —	4	4					
Seizing — — —	1/4	12					
Laſhing — — —	1 1/2	18					
Preventers *(in War only)* 2	3	70	Single	11	4		

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Iron. Thimbles
FORE-MAST CONTINUED.							
Braces Preventer Strapping —	3	3					
Seizing — —							
Lifts, 2 — — — —	3 1/2	84	Single	12	6		
Span for the Cap — —	4 1/2	6 1/2					
Short Span — — —	3 1/2	2 1/2					
Strapping — — —	4	4					
Seizing — — —	3/4	14					
Jigger Tackle, No. 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping —	3	4					
Truſs Pendants, 2 — — —	6	12					
Falls, 2 — — —	2 1/2	44	Double	9	4	4	4
Strapping — —	3	4					
Eye Seizings, 2 —	1	11					
Nave Line — —	1 1/2	15	Single	6	1		
Puddening the Yard — worn	6	8					
Clew-garnets, 2 — — —	3	54	Sin. Strapbo.	11	4		
			Single	11	2		
Straps ab. the Yard	3	6					
Strapping — —	3	1 1/2					
Seizing — —	1/4	12					
Laſhing — —	1	8					
Buntline Legs, 4 — — —	2 1/2	40	Double	8	4		
Falls, 2 — — —	2 1/2	40	Single	8	8		
Strapping — — —	2 1/2	8					
Leechline Legs, 2 — — —	2	40	Double	7	4		
Falls, 2 — — —	2	40	Single	7	8		
Strapping — — —	2 1/2	8					
Slablines, 2 — — —	2	28	Single	7	2		
Strapping — — —	2	1					
Bowlines, 2 — — —	3 1/2	46	Single	13	4		
Bridles, 2 — — —	3 1/2	4					
Strapping — — —	3 1/2	4					
Seizing — — —	1/4	9					
Laſhing — — —	2	8					
Earings, 6 — — — —	1 1/2	26					
Sheets Cabled, 2 — — —	5	64	Sin. Coaked	17	2		2
Strapping — — —	5	3 1/2					
Seizing — — —	1	12					
Stoppers, 2 — — —	4	4					
Tacks Taper and Cabled, 2 —	6 1/2	34	Shouldered	16	2		
Strapping — — —	5	4 1/2					
Seizing — — —	1	8					
Stoppers, 2 — — —	5	4 1/2				2	2
Lanyards, 2 —	1 1/2	4					
Gammoning the Bumkin, worn —	3 1/2	13				2	6
Lanyards, 2 — — —	2	8					
Lany. for Pudden & Dolphin —	1	8					4
Slings, 1 Pair — — —	9	7 1/2					1
Strap — — —	9	3					1
Seizings, 2 — — —	1	14					
Lanyard — — —	2 1/2	6					
Stayſail Hallyard — —	3	26	Single	10	2		
Sheets, 2 — — —	3	23	Single	10	2		
Tack — — —	2	2					
Downhaller — —	2	23	Single	7	1		
Strapping — —	3	3 1/2					
	2	2					

36 Gun Ship. 871 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-MAST CONTINUED.							
Studd. Sail Hallyard, Inner, 2 Pr.	2	40	Single	9	6		
Outer, 2 Pr.	2¼	74	Single	9	4		
Sheets, 2 Pr.	2	12					
Tacks, 2 Pr.	2½	56	Single	9	2		
Strapping	2½	14					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair	4½	5					2
Falls, 2	2½	46	Double	9	2	2	2
			Single	9	2	2	2
Strapping	2	3¼					
Shrouds fine 4 Pr.	5¼	56	Dead Eyes	8	8		
Seizings Eye, 4	¼	16					
Throat, 8	¼	49					
End, 8							
Lanyards fine, 8	2¼	40					
Ratling	1	80					
Standing Backstays fine 3 Pr.	5½	94	Dead Eyes	8	4		
Seizings Eye, 3	¼	12					
Throat, 6	¾	39					
End, 6							
Lanyards fine, 6	2¼	20					
Breast Backstay Runners, 2	3	8	Single	11	2		
Falls, 2	2½	18	Double	10	4		
Strapping	3	3					
Stay Cabled 4 Strands fine	6	18½					
Collar fine	5	3	Single	15	1		
Tackle	2½	20	Long Tackle	18	1		
			Single	10	1		
Strapping	3½	3					
Seizing	¾	8					
Preventer Stay cab. 4 Str. fine	4½	18½					
Collar, fine	4	3	Single	12	1		
Tackle	2	18	Long Tackle	16	1		
			Single	9	1		
Strapping	3	2½					
Seizing	¾	8					
Lashing the Col.	2	5½					
Shifting Backstays, fine, 1 Pair	5½	30					2
Tackles 4 No.	2½	40	Double	10	4	4	4
			Single	10	4	4	4
Strapping	3½	6					
Futtock Shrouds, fine, 4 Pair	5½	20	Plates with Dead Eyes	8	8	8	8
Seizing Upper, 8	¼	28					
Lower, 8	¾	24					
Ratling	1	26					
Top Rope Pendants, fine, 2	7	31	S. Brass Shiv. Iron Bound	20	2		2
Falls, 2	4	86	Treb. Ir. Bo. Coaked	15	4		
Tye	4½	37	Flat Side	16	2		
			Doub. Coak.	16	1		
Strapping	4½	6					
Seizing	1	10					
Lashers at the Mast Head, 2	2	9					
Yard	1½	4					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-MAST CONTINUED.							
Hallyards, 2	3	96	Do. thin Co.	19	2		
			Sin. Ditto	19	2	2	2
Strapping	4	7					
Seizing	¼	16					
Horses, 2	3½	10					
Stirrups, 6	3	7					6
Braces, 2	3	76	Single	10	4		
Pendants, 2	3¼	8	Single	10	2		
Preventer, 2	3	9					
Strapping	3	5					
Lifts, 2	3	54	Double	20	2		
			Single	10	4		
Beckets, 2	3	2					
Strapping	3	6					
Seizing							
Parrel Ropes, 2	2½	9	Parrel	16	1		
Racking and Seizing	¼	15					
Clewlines, 2	3	72	Sin. Str. bo.	10	4		
			Single	10	2		
Strapping	3	8					
Buntlines, 2	2½	54	Single	8	4		
Strapping	2½	3					
Leechlines, 2	2	22	Single	7	2		
Strapping	2	1					
Bowlines, 2	2½	54	Single	9	2		2
Bridles, 4	2½	9					2
Strapping	2½	1½					
Lashing	1	10					
Reefstackle Pendants, 2	3	37	Double	7	4	2	2
Falls, 2	1½	44					
Strapping	2	2					
Earings, 10	1½	36					
Sheets, 2	5½	46	Sin. Shoul.	17	2		
			¼ do. th & thin	17	2		
Straps for Sheet Blocks, 2	6	4½					
Quarter Blocks, 2	4½	7					
Lashers for Quarter Blocks, 2	2	6					
Seizings, 2	1	18					
Span worn	3	7					
Stoppers, 2	4½	4					
Slings, 1 Pair	4	8					
Stayfail Stay	3½	19	Single	11	1		
Tackle	2	15	Double	8	1		
			Single	7	1		
Hallyard	3	33	Single	10	1		
Strapping	3	1½					
Sheets, 2	3	30	Single	10	2		
Strapping	3	1½					
Outhaller	2	16	Single	7	1		
Downhaller	2	25	Single	7	1		
Strapping	2	1½					
Studdingsail Hallyards, 2 Pair	3	84	Single	10	6		
Sheets, 2 Pair	2½	42	Single	10	2		
Tacks, 2 Pair	3	58	Single	10	2		
Downhallers, 2	1½	52	Single	6	2		6
Boom Tackles, 2	2	70	Double	7	2		
			Single	7	4		
Tails and Straps, 2	3	16					
	2	5½					

36 Gun Ship. 871 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — — —	3	63					12
Lanyards, 6 — — —	1¼	12					
Standing Backstays, 2 Pair —	3	74	Dead Eyes	6	4		
Lanyards, 4 — — —	1¼	20					
Stay cabled 4 Strands — —	3¼	25	Single	10	1		
Strapping — — —	2¼	1					
Tackle — — — {			Double				
			Single				
Strapping — — —							
Flagstaff Stay — — —							
Hallyards, 1 Pair — —	1	25					
Tye — — — — —	3	14	Double	6	1		
Hallyard — — {	1¼	22	Single	6	2		
Strapping — — —	2	1½					
Horses, 2 — — — —	2¼	7					
Braces, 2 — — — —	1¼	85	Single	6	4		2
Pendants, 2 — — —	2	8	Single	6	2		
Strapping — — —	2	3					
Lifts single, 2 — — — —	2¼	36					2
Strapping — — —							
Parrel Ropes, 2 — — —	1¼	3	Parrel	8	1		
Clewlines, 2 — — —	1¼	57	Single	6	6		
Strapping — — —	2	2½					
Bowlines, 2 — — — —	1¼	62	Single				6
Bridles, 2 — — —	1¼	3					
Strapping — — —							
Earings, 2 No. — — — —		1½	Tarr'd Lines				
Shifting Backstays, 1 Pair —	3	36					2
Tackles, 2 No. — {	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping — —	2	1½					
Studdingsail Hallyards, 2 Pair —	1¼	66	Single	6	6		
Sheets, 1 Pair — —	1	17					
Tacks, 2 Pair — —	1¼	40	Single	6	4		
Downhallers, 2 No. — —	1	15					1
Strapping — — —	1¼	8					
MAIN-MAST.							
Woolding — — —	2¼	225					
Girdlines, 2 — — —	3¼	64	Single	13	2		
Strapping — — —	3	2					
Seizing — — —	¾	6					
Lashings, 2 — — —	1¾	15					
Pendants of Tack. cab. fine, 2 Pr.	8¼	15½	Sin. Coak.	17	2		8
Strapping —	5¼	3					
Seizing — —	1	8					
Runners of Tackles, 4 — —	5½	30	Do. thin Co.	17	4		
Strapping —	5	6					
Falls of Tackles, 4 — —	3	162	Sin. thin Co.	18	4	4	4
Strapping — —	5	7½					
Seizing — —	¾	20					
Shrouds cabled, fine, 7 Pair —	8¼	148	Dead Eyes	14	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1½	67					
End 14 — — —	1	67					
Lanyards, fine, 14 — —	4	84					
Ratling — — — —	1½	245					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stay cabled 4 Strands, fine —	14¼	17½	Heart	19	1		
Seizings, 4 — — —	1¼	20					
Lanyard, fine — —	4¼	14					
Collar cabled 4 Strands, fine	9¼	7	Heart	19	1		
Worming — —	1¼	32					
Seizings, 3 — —	1¼	16					
Lashing — — worn	3	15					
Preventer Stay cab. 4 Strands fine	9½	15	Heart	14	1		
Lanyard, fine —	3	8					
Col. cab. 4 str. fine. do.	5	5	Heart	14	1		
Lashing — —	2	5					
Seizings, 3 — —	1	16					
Catharpin Legs, 4 — — —	5	9					
Seizings, 8 — —	1	32					
Stay Tackle Pendant — —	5	4	Do. thin Co.	14	1		
Falls. — — — {	3	36	S. thin Co.	16	1	1	1
				12	1	1	1
Strapping — —	4	3					
Seizing — —	¾	12					
Lashing — —	1½	10					
Fore-Stay Tackle Fall — — {	3	38	Do. thin Co.	14	1		
			S. thin Co.	16	1	1	2
				12	1	1	1
Strapping —	4	3					
Seizing — —	¾	12					
Crowfoot for the Top — —	1	80	Euphro	22	1		2
Tackle — — —	1	7					
Strapping — —	1	1					
Jeers { Tye — — — {	6	94	Doub. Coak.	19	4		
Falls, 2 — — — {							
Strapping — — —	6½	18					
Seizing — — — —	1	24					
Lashers to the Mast Head, 2	3½	32					
Yard — —	2	12					
Stoppers, 2 — — —	4¼	6					
Horses, 2 — — —	4½	14					2
Stirrups, 6 — — —	3	10½					6
Seizings, 4 — — —		¾	of a Tar'd Line				
Lanyard — — —	2	3½					
Yard Tackle Pendants, 2 —	5½	8	Do. thin Co.	14	2		
Falls, 2 — — {	3	80	S. thin Co.	16	2	2	2
			Single	12	2		
Strapping — —	4	7½					
Seizing — —	¾	13					
Inner Tricing-Lines, 2	2	34	Single	7	2		
Outer Tricing-Lines, 2	1½	34	Single	6	4		
Strapping — —	2	6					
Braces, 2 — — —	3½	76	Sin. Coak.	12	2		
Pendants, 2 — —	4¼	9	Sin. Coak.	12	2		
Preventer, 2 — —	3½	10					
Strapping — —	4	3					
Seizing — — —	¾	12					
Preventers *(in War only)* 2	3	70	Single	11	4		
Strapping — —	3	3					
Seizing — — —							
Lifts, 2 — — — —	3¼	92	Single	12	6		
Span for the Cap — —	5	7					
Short Span — —	3½	2					

36 Gun Ship. 871 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping —	4	4					
Selzing — —	1/4	14					
Jigger Tackles, 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping —	3	4					
Truſs Pendants, 2 —	6	15					4
Falls, 2 — —	2 1/2	52	Double	9	4	4	4
Strapping —	3	4					
Eye Seizings, 2	1	11					
Nave-Line — —	1 1/2	16	Single	6	1		
Puddening the Yard — worn	6	8					
Clewgarnets, 2 — — —	3	66	Strapbound	12	4		
			Single	12	2		
Strap about the Yard	3	7					
Strapping —	3	1 1/2					
Seizing — —							
Laſhing — —	1	8					
Buntline Legs, 4 —	2 1/2	40	Double	8	2		
Falls, 2 — —	2 1/2	46	Single	8	10		
Strapping —	3	10					
Leechline Legs, 2 —	2	46	Double	7	4		
Falls, 2 — —	2	46	Single	7	8		
Strapping —	3	10					
Slablines, 2 — —	2	36	Single	7	2		
Strapping —	2	1					
Bowlines, 2 — —	3 1/2	46	Double	14	1		4
Bridles, 4 —	3 1/2	12					2
Strapping —	3	3 1/2					
Seizing — —	1/4	4					
Laſhing — —	2	4					
Tackle — —	2	12	Long Tackle	14	1	1	1
			Single	8	1	1	1
Strapping —	2 1/2	2					
Earings, 6 — —	1 1/2	28					
Sheets, cabled, 2 —	5 1/2	72	Sin. Coak.	17	4		4
Strapping —	5 1/2	7 1/2					
Seizing — —	1	15					
Laſhers, 2 — —	2	6					
Stoppers, 2 — —	4 1/2	4					
Tacks Taper and Cabled, 2	7	36					
Stoppers, 2 — —	4 1/2	4				2	2
Lanyards, 2 —	1 1/2	5					
Lany. for the Pudden & Dolphin	1	8					4
Slings, 1 Pair — —	9	8 1/2					1
Strap — — —	9	3					1
Seizing — —	1	15					
Lanyard — —	2 1/2	6					
Quarter Tackle Pendants, 2	5	9	Do. thin Co.	14	2		
Falls, 2 —	3	72	S. thin Co.	16	2	2	2
				12	2	2	2
Strapping —	4	7					
Seizings, 3 —	3/4	13					
Luff Tackles, 4 No. — —	3	120	Double	12	4	4	4
			Single	12	4	4	4
Strapping —	3 1/2	8					
Seizing — —	1/2	20					
Stayſail Stay — — — worn	3 1/2	11					2
Collar — — —	3	2					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayſail Collar Seizing — —		6					
Lanyard — —	1	4					
Hallyard, 1 — — —	3	31	Single	10	3	1	1
Sheets, 2 — — —	3	11	Single	10	2	1	1
Tacks, 2 — — —	3	4					
Downhaller — — —	2	17	Single	8	1		
Strapping — — —	3	3					
	2 1/2	1 1/2					
Studd. ſail Hallyards, Inn. 2 Pr.	2	48	Single	9	6		
Outer, 2 Pr. —	2 1/2	82	Single	9	4		
Sheets, 2 Pair — —	2	23					
Tacks, 2 Pair — —	2 1/2	44	Single	9	2		
Strapping — — —	2 1/2	16					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	4	6					2
Falls, 2 — — —	2	54	Double	9	2	2	2
			Single	9	2	2	2
Strapping — —	3	4					
Shrouds, fine, 4 Pair — —	5 1/2	68	Dead Eyes	8	8		
Seizings Eye, 4 —	1/4	16					
Throat, 8 —							
End, 8 — —	1/4	49					
Lanyards, fine, 8 — —	2 1/2	40					
Ratling — — —	1	90					
Standing Backſtays, fine, 3 Pr. —	5 1/2	105	Dead Eyes	8	4		
Seizings Eye, 3 —	1/4	12					
Throat, 6 —	1/4	39					
End, 6 —							
Lanyards, fine, 6	2 1/2	20					
Breaſt Backſtay Runners, 2 —	3 1/2	8	Single	11	2		
Falls, 2 — — —	2 1/2	18	Double	9	4		
Strapping — —	3	2 1/2					
Stay Cabled 4 Strands, fine —	6	20					
Collar, fine — — —	5	3	Single	15	1		
Tackle — — —	2 1/2	18	Long Tackle	18	1		
			Single	9	1	1	1
Strapping — — —	3 1/2	3					
Seizing — — —	1/4	12					
Laſhing — — —	2	6					
Preventer Stay, Cabled 4 ſtr. fine	4 1/2	19					
Collar, fine —	3 1/2	2 1/2	Single	11	1		
Tackle — — —	2	16	Long Tackle	16	1		
			Single	9	1	1	1
Strapping —	3	3					
Seizing — —	1/4	8					
Laſhing the Col. —	1 1/2	6					
Shifting Backſtays, fine, 1 Pair —	5 1/2	34					2
Tackles, 4 No. —	2 1/2	40	Double	10	4	4	4
			Single	10	4	4	4
Strapping — —	3 1/2	6					
Futtock Shrouds, fine, 4 Pair —	5 1/2	22	Pla with D.E	8	8	8	8
Seizings Upper, 8 —	1/4	28					
Lower, 8 —	1/4	24					
Ratling — —	1	26					
Top Rope Pendants, fine, 2	7	34	Sin. I. bound Braſs Shiv.	10	2		4

36 Gun Ship. 871 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2	4	98	Treb. I. bo.	15	4		
			Flat	17	2		
Tye	4½	38	One Side Co.	17	1		
Strapping	4½	6					
Seizing	1	10					
Laſhers at the Maſt Head, 2	2	10					
Yard	1½	4					
Hallyards, 2	3	120	Do. thin Co.	19	2		
			S. thin Co.	19	2	2	2
Strapping	4½	6					
Seizing	¾	15					
Horſes, 2	3½	11					
Stirrups, 6	3	7½					6
Braces, 2	3	64	Single	10	2		
Pendants, 2	3½	8	Single	10	2		
Preventers, 2	3	9					
Span ab. the Mizen Maſt	4	4½					
Strapping	3	3					
Lifts, 2	3	62	Double	20	2		
			Single	10	4		
Beckets, 2	3	2½					
Strapping	3	6					
Seizing							
Parrel Ropes, 2	2½	9	Parrel	18	1		
Racking and Seizing	¾	16					
Clew-lines, 2	3	82	Sin. Str. Bo.	10	4		
			Single	10	2		
Strapping	3	7					
Bunt-lines, 2	2½	60	Single	8	4		
Strapping	2½	3					
Leech-lines, 2	2	26	Single	7	2		
Strapping	2	1					
Bowlines, 2	3	58	Single	11	2		2
Bridles, 4	3	14					4
Strapping	3½	1½					
Seizing							
Frapping and Laſhing	1½	10					
Reeftackle Pendants, 2	3	42	Double	7	4	2	2
Falls, 2	1½	58					
Strapping	2	2					
Earings, 10	1½	38					
Sheets, 2	6	52	Sin. Shoul.	17	2		
			¼ Double	17	2		
Straps for Sheet Blocks, 2	6½	4	Thick & thin				
Quarter Blocks, 2	4½	7					
Laſhers for Quart. Blocks, 2	2	7					
Seizings, 2	1	4					
Span worn	3	7					
Stoppers, 2	4½	4					
Slings, 1 Pair	4	9					
Stayſail Hallyard	3	36	Single	10	1		
Strapping	3	1					
Sheets, 2	2½	30	Single	10	2		
Strapping	3	1½					
Pendant	4	8	Single				
Tack	3	4					
Downhaller	2	22	Single	8	2		
Strapping	1½	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2	1¾	35	Single	6	2		2
Middle Stayſail Stay	3	20	Single	10	1		
Tackle	2	18	Double	8	1		
			Single	8	1		
Hallyard	2¼	35	Single	9	1		
Sheets, 2	2¾	35	Single	9	2		
Tack	2	4					
Downhaller	2	24	Single	8	2		
Strapping	2½	6					
Tricing-line			Single				
Studdingſail Hallyards, 2 Pair	3	88	Single	10	6		
Sheets, 2 Pair	2½	44	Single	10	2		
Tacks, 2 Pair	3	58	Single	10	4		
Downhallers, No. 2	1½	54	Single	6	2		6
Boom Tackles, 2 No.	2	70	Double	8	2		
			Single	8	4		
Laſh. for Booms worn	2½	20					
Tailing and Strapping	3	16					
	2	5½					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair	3	70					12
Lanyards, 6	1½	12					
Standing Backſtays, 2 Pair	3	82½	Dead Eyes	6	4		
Lanyards, 4	1¼	16					
Stay cabled 4 Strands	3½	20	Single	11	1		
Strapping	3	1					
Flagſtaff Stay							
Hallyards, 1 Pair	1	24					
Tye	3	15	Double	7	1		
Hallyard	1½	34	Single	7	2		
Strapping	2	1½					
Horſes, 2	2½	8					
Braces, 2	1½	70	Single	6	2		
Pendants, 2	2	8	Single	7	2		
Strapping	2	3					
Lifts ſingle, 2	2½	39	Single				2
Strapping							
Parrel Ropes, 2	1¾	3	Parrel	9	1		
Clewlines, 2	1¾	64	Single	6	6		
Strapping	1¾	3					
Bowlines, 2	1¾	62	Single	6	2		
Bridles, 4	1¾	6					2
Strapping	1¾	1					
Earings, 4		½ of a Tar'Line					
Shifting Backſtays, 1 Pair	3	41					
Tackles, 2 No.	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping	2	1½					
Stayſail Stay	2½	30	Single	8	1		
Hallyard	2	39	Single	7	1		
Sheets, 2	2	39	Single	7	2		
Tack	1¾	6					
Downhaller	1¾	27	Single	6	2		
Strapping	2	2½					

36 Gun Ship. 871 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	2	72	Single	7	6		
Sheets, 2 Pair	1½	36					
Tacks, 2 Pair	2	46	Single	7	4		
Downhallers, 2	1	36				2	
Strapping	2	8					
MIZEN-MAST.							
Woolding	2½	85					
Girdlines, 2	3	56	Single	11	2		
Strapping	3	1½					
Seizing							
Laſhings, 2	1½	8					
Burton Pendants, 1 Pair	4	6				2	
Falls, 2	2½	54	Double	9	2	2	2
			Single	9	2	2	2
Strapping	3	3					
Shrouds, ſine, 5 Pair	5½	82	Dead Eyes	8	10		
Seizings Eye, 5	1	20					
Throat, 10 / End, 10	3½	58					
Lanyards, ſine, 10	2½	50					
Ratling	1	95					
Stay Cabled 4 Strands, ſine	6	12½				2	
Seizings, 3	1	8					
Lanyard, ſine	3	5					
Collar, ſine	5	3				1	
Seizing	1	3					
Laſhing	1½	3					
Crowfoot for the Top	1	50	Euphro	15	1		2
Tackle	1½	5					
Strapping	1½	1					
Jeers, 1 Pair	4½	34	Double Co.	16	1		
			Single Co.	16	1		
Strapping	4	6					
Seizing	1	9					
Laſhing at the Maſt Head	2½	10					
Yard	2	6					
Derrick	3½	35	Double	12	1		
Span	3½	3	Single	12	1		1
Strapping	3½	2					
Seizing	¾	10					
Laſhing	1½	8					
Vang Pendants, 2	3½	9					
Falls, 2	2	30	Single	8	4	2	2
Strapping	2½	1					
Bowlines, 2	2½	20	Single	9	4		2
Strapping	2½	2					
Truſs Pendant	3½	5				2	
Falls	2	20	Long Tack.	15	1	1	1
			Single	8	1	1	1
Strapping	2½	3					
Seizing							
Brails Peek Legs, 2 Pr.	1½	12					
Falls	2	18	Single	6	4		2
Middle	2	22	Single	7	2		
Throat	2½	25	Single	9	2		
Middle	2	22	Single	7	2		
Foot	2	18	Single	7	2		2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping	2½	8					
Lacing Mizen to Yard	1½	26					
Maſt worn	2½	20					
Earings, 2	1½	10					
Peek Hallyards, 1 Pair	1½	22	Single	6	1		1
			Double	11	1		1
Sheet	3	24	Single	11	1		
Strapping	3	3					
Seizing							
Tack	2	3					
Slings, 1 Pair	4	6					
Stayſail Stay worn	4	14					2
Collar	3½	3					1
Seizing							
Laſhing	¾	3					
Lanyard	1½	6					
Hallyard	2½	28	Single	8	3		
Sheets, 2	2½	13	Single	8	2		1
Tack	2½	2½					
Downhaller	1½	16	Single	6	2		
Strapping	2½	5					
Brails, 2	2	27	Single	7	2		2
Driver Hallyards, 2 Pair	2½	38	Single	9	4	1	2
Sheets, 2	2½	17	Single	9	2		
Tacks, 2	2½	22	Single	9	2		
Downhaller	1½	18	Single	6	1		
Strapping	2	6					
Laſhing	¾	12					
CROSS-JACK-YARD.							
Span about the Cap	3	2					
Braces, 2	2	52	Single	8	2		
Pendants, 2	2½	5	Single	8	2		
Preventer, 2							
Strapping	2	2					
Lifts Running, 2	2	50	Single	8	4		
Strapping	2	2½					
Slings, 1 Pair	3½	4½	Sin. do. Scord	12	1		
Strapping	3	2					
Seizing	¾	3					
Laſhing	1	5					
MIZEN-TOP-MAST.							
Shrouds, ſine, 3 Pair	3½	36	Dead Eyes	6	6	6	6
Seizings, 6		1½	Tarr'd Line				
Lanyards, ſine, 6	2	24					
Ratling	1	44					
Standing Backſtays, ſine, 1 Pair	3½	26½	Dead Eyes	6	2		
Seizings, 4		½	of a Tar'd Line				
Lanyards, ſine, 2	2	8					
Stay cabled, 4 Strands, ſine	4	12					
Lanyard, ſine	2	5					2
Collar	3	2	Single	12	1		
Seizing and Laſhing	¾	6					
Flag-ſtaff Stay							
Hallyards, 1 Pair	1	16					
Shifting Backſtays, ſine, 1 No.	3½	13					1

36 Gun Ship. 871 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backstay Tackle —	2	12	Double	7	1	1	1
			Single	7	1	1	1
Strapping —	2½	4					
Futtock Shrouds, fine, 3 Pr. —	3½	10	Plates with Dead Eyes	6	6	6	6
Seizings, 6 —		1	Tarr'd-Line				
Ratling —	1	11					
Top Rope Pendants, fine, 2	4½	15	Single I. bo.	12	1		4
Falls, 2 — —	2	37	Double D°	10	2		
Tye — — —	3½	12	Sin. do. Scord	12	1		
			Double thin	10	1		
Hallyard — —	2	40	Single thin	10	1	1	1
Strapping — —	3	3					
Lashing — —	¾	3					
Horses, 2 — — —	2	8					
Stirrups, 4 — —	2	4					4
Braces, 2 — — —	2	45	Single	7	2		
Pendants, 2 — —	2½	3½	Single	7	2		
Strapping — —	2	1½					
Lifts, 2 — — — —	2	48	Single	7	4		
Strapping — —	2½	3					
Parrel Ropes, 2 — —	2	4	Parrel	11	1		
			Strap bound	7	4		
Clew-lines, 2 — — —	2	58	Single	7	2		
Strapping —	2	1½					
Buntline 2 — —	1½	40	Single	6	2		
Strapping —	1½	1					
Leechlines, 2 — —			Single				
Strapping —							
Bow-lines, 2 — — —	1½	38	Single	6	2		2
Bridles, 4 — —	1½	6					2
Strapping — —	1½	1					
Reef Tackle Pendants, 4							
Falls, 2 —							
Strapping —							
Earings, 6 — — —	1	27					
			Sin. Should.	11	2		
Sheets, 2 — — —	3½	34	Double	11	1		
Strapping — — —	4	2					
	3	2½					
Seizing — —							
Lashing — —	1	4					
Stayfail Hallyard —	2	34	Single	7	1		
Sheets, 2 — —	2	26	Single	7	2		
Tacks, 2 — —	2	2					
Downhaller — —	1	16	Single	5	1		
Strapping — —	2	1½					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair — — —	2	37					8
Lanyards, 4 — —	1	10					
Backstays, 1 Pair — —	2	34					4
Lanyards, 2 — —	1	6					
Stay — — — —	2½	11					1
Lanyard — —	1	3					
Tye — — — —	2	5½					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard — — —	1½	28	Single	5	2		
Horses, 2 — — — —	2	5					
Braces, 2 — — — —	1½	42	Single	5	2		
Lifts, fingle, 2 — —	2	28					2
Parrel Ropes, 2 — —	1	3	Parrel	6	1		
Clew-lines, 2 — —	1½	44	Single	5	2		
Bow-lines, 2 — —	1	44					
Bridles, 4 — —	1	3					4
Earings, 2 — — —		1	Tarr'd-Line				
Strapping — — —	1½	3					
NECESSARY ROPES.							
Viol Cabled — — —	10	44	Single Coak.	42	1		
Strapping —							
Seizing — —							
Lashing —	3	8					
Winding Tackle Pendant	9	11	Co. Fourfold	18	1		
			Treble	18	1		
Fall —	3½	38	Single	18	1		
Strapping	6	12					
Seizing	1½	14					
Catt Falls, 2 — — —	4	72	Treble I. bo. Brass Shiv.	18	2		
Lanyards, 2 —	2	22	Single and 2 large ragged Staples	8	2		4
Stoppers 2 No. —	3½	3					
Guy's Mast-Head, 2 —	7	26					
Fore, 2 — —	7	16					
After, 2 — — —	4	18					
Fish Tackle Pendant —	7	9	Single Coaked	20	1	1	1
Fall — —	3½	40	Long Tack.	32	2		
Strapping —	4½	9					
Seizing —	1	16					
Lanyard —	2½	14					
Anchor Stock Tacklefall —	2½	22	Double	9	1	1	1
			Single	9	1	1	1
Bill Pendant — —	4½	8½				1	2
Strapping — —	3	2					
Seizing — —							
Stoppers Sheet Anchor, 2 —	6½	7					
Best Bower, 2 — —	6½	7					
Small Bower, 2 —	6½	7					
Spare, 2 — —	6½	7					
Seizings —		28					
Wing cabled, 2 No. —	6½	14					
Dog, 2 No. — —	6	14					
Seizing — —	¾	26					
Stream Anchor, 2 —	4	6					
Kedge, 2 — — —	3	4					
Deck & Bit, cabled, 10 No.	8½	30					10
Lanyards, 10 No.	2½	42					
Seizing —	1½	34					
	1	34					

36 Gun Ship. 871 Tons.

Names of the standing and running Rigging.	Inc. in Circumt.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	7	15					
Ditto — — — —	6½	15					
Ditto — — —	6	18					
Ditto — — —	5½	18					
Ditto — — — —	5	6					
Ditto — — —	4	10					
Ditto — — —	3½	12					
Ditto — — (none.)							
Ditto — (none.)							
Shank painters Sh. Anchor cab.	5½	9					
Best Bower, 2 —	5½	6				1	
Small Bower, 2 —	5½	6				1	
Spare, Cabled, 2 —	5½	9					
Seizing —		16					
Ropes Buoy Sheet Anchor cabled	5	24					
Best Bower Cabled —	5	24					
Small Bower Cabled —	5	24					
Seizing —		17					
Stream Anch. Cabled —	3½	30					
Kedge Cabled — —	3	30					
Davit, 2 — — —worn	3	8					
Bell — — — —	2½	2				1	
Buckets — — —		70	Coil Lashing				
Swab, 2 — worn	3	20	Single	10	2		
Entering, 6 — —	3½	18					
Passing — — —	4	50					
Lanyard — —	2	11					
Slip — — — —	3½	30					
Quarters, Poop and Stantion in the Waste, — —	3½	100					
Fore, Main & Mizen Tops		1	Coil Lashing				
Wheel or Tiller White —	3½	23	Single	11	2	2	
Strapping — —	3	1½					
Seizing — —							
Puddening of Anchors, worn	3½	110	Old Canvas.	yd			
	2	30		16			
Seizings,	1	70					
Slings Buoy, 4 Pair — —	3½	48				6	
Lanyards, 3 —worn	2½	12					
Seizings, 6 —		2	Tarr'd Lines				
Gun — — —	6½	6½					
Nut — — —	4½	3½					
But, 4 Pair — —	5	20				4	
Hogshead, 4 Pair — —	4	16				4	
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys —worn	3½	5					
Swabs — worn	3½	16					
Cable Bends, 6 — —	2	60					
Rudder Pendants, cabled, 2 —	5½	8½				4	
Lanyards, 2 —							
Falls, 2 — — —	2½	42	Long Tackle	24	2	2	2
			Single	12	2	2	2
Strapping — —	4	5					
Seizing — — —	¾	12					
Stern Ladders, 4 Strands, 2 worn	4½	18					
Middle Rope, 2 worn	1½	14					
Lashing — worn	1	9					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 — —	5½	6					
	3½	2					
Swifters for Capston-Bars —	2	55					
Lashing-Cables between Decks							
Sheep-Pens, Steep-Tubs,		2½	Coils Lashing				
Tubs in the Tops, & Booms							
Nettings for the Quart. Waste,							
Tops, and Barricadoes —	1	650					
Hallyard for Top Lanthorn —							
Ensigns — —	1	30					
Jacks — —	¼	10					
For Colours Head Line —		2	White-lines				
For Colours Rope Bands —		4 lb	Marlines				
For Colours Pendant Slings —	¼	22					
Awnings Ridge and Side Rope —	3	100	Single	10	3		
Stops — — —	1	30					
				26	1		
Crowfeet — —	1	120	Euphro	16	1		
				14	1		
Hallyard — —	1½	36					
Ridge Tackle Fall —	2½	10	Double	8	1		
			Single	8	1		
For different Uses of the Ship			Snatch Iron	17	4	4	4
			Bo. Hooks	13	4	4	4
			Coaked	12	4	4	4
Strapping — —	4	8					
Seizing — —							
LONGBOAT.							
Burton Pendants, 1 Pair — —	3½	3	Single	9	2		2
Runner — —	2½	10					
Falls, 2 — —	2	14	Double	8	2	2	2
			Single	8	2	2	2
Strapping — —	2½	2½					
Shrouds, 2 Pair — —	3	16					4
Lanyards, 4 — —	1	8					
Stay — — — —	3½	5					1
Lanyard — —	1	2					
Tye — — — —			Single				
Main Hallyard — —	1½	15	Single	6	1		
Outer Hallyard —	1½	17	Doub. I. bo.	6	1		
			Single	6	1		1
Sheet — — —	1½	10	Double	6	2		
			Single	6	2		
Wood Hoops, 10							
Downhaller — —	1½	13	Single	5	1		
Strapping — —	1½	7					
Topping Lift — —	1½	14					
Fore Hallyard — —	2	12	Single	7	1		
Sheet — — —	2	4					2
Tack — — —	1	1					
Bowline — —	2	1½					
Jib Hallyards — —	2	12	Single	7	1		
Sheet — — —	2	8					
Outhaller — —	2	9	Iron Trave		1		
Innhaller — —	1	6					
Boat-Rope, cabled — —	6	30					
Lanyard — —	2	3					

36 Gun Ship. 871 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	2	30					
Grapnel-Rope, cabled — —	3½	45					
Painter — — — —	3½	6					
Sternfaſt — — worn	3	12					
Fenders, cabled, 6 — worn	5	10					
Lanyards, 6 — —	1½	10					
Rudder Lanyards, 2 — —	1½	2					
PINNACE.							
Hallyards Main and Fore, 2 —	1½	10					
Sheets, 4 — — —	1½	10					
Grapnel-Rope, cabled — —	3½	35					
Painter — — —	3½	5					2
Sternfaſt — — worn	2	5					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5	5				4	6
Seizings, — —	¼	10					
Rudder Lanyards, 2 — —	1	1					
YAWL or CUTTER.							
Hallyards (*if Cutters*) 2 Pair —	2	6	Iron Trave		2		
Sheets, 4 — — —	2	4					
	1½	14					
Grapnel-Rope, cabled —	3½	40					
Painter — — —	3½	5					2
Slings, 2 Pair — —	5½	5				4	6
Seizings, 2 — —	1	10					
Rudder Lanyards, 2 — —	1	1					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 71, Article 2, by Gammoning, 1 —| 6 | 48 | is meant, One Gammoning are neceſſary, made of Rope 6 Inches in Circumference, containing in the Whole 48 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
A SHIP OF 32 GUNS,
Being of 677 Tons Burthen.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding — — —	2 1/2	85					
Gammonings, 1 — — —	5 1/2	70					
Shrouds fine, 1 Pair — —	6	14	Hearts	9	2	2	2
Collars fine, 2 — —	5	5	Hearts	9	2		
Seizings, 2 — — —	1	8					
Laſhings, 2 — — —	1 1/2	6					
Lanyards fine, 2 — —	2 1/2	8					
Bobſtays cabled fine 2 Pair —	7	18	Hearts	9	2		
Collars fine 2 — —	7	5	Hearts	9	2		
Seizings, 2 — —	1	16					
Laſhings, 2 — —	1 1/2	6					
Lanyards fine, 2 — —	3	10					
Horſes, 2 — — —	3	14					6
Straps, 2 — — —	2 1/2	3					4
Lanyards, 2 — —	1 1/2	5					
SPRITSAIL.							
Horſes, 2 — — —	3	9					
Stirrups, 6 — —	2 1/2	5					6
Braces, 2 — — —	2 1/2	60	Double	9	4		
Pendants, 2 — —	3	5	Single	9	4		
Strapping — —	3	9					
Lifts, 2 — — —	2 1/2	44	Single	9	4		
Beckets, 2 — — —	2 1/2	3 1/2					
Strapping — —	2 1/2	3					
Seizing — — —							
Standing, 2 — — —	3	6					4
Straps, 2 — —	3	3					
Lanyards, 2 — —	1 1/2	4					
Hallyard — — —	2 1/2	28	Long Tackle	18	1	1	1
			Single	9	1		
Strapping — —	3	2					
Seizing and Laſhing —							
Slings, 1 Pair — —	4 1/2	4					
Seizing and Racking —		8					
Clew-Lines, 2 — — —	2	30	Strap bound	8	4		
			Single	8	2		
Strapping — —	2 1/2	4					
Buntlines, 2 — — —	2	22	Single	8	2		
Strapping — — —	2	1					
Earings, 4 — — —	1	12					
Sheets cabled ſingle, 2 — —	3 1/2	30					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
JIBB.							
Horſes, 1 — — —	3 1/2	15					
Seizings, 2 — — —		1 1/2	of a Tar'Line				
Guy Pendants, 1 Pair — —	3 1/2	23	Single	11	2		
Falls, 2 — — —	2 1/2	25	Single	9	4		
Strapping — — —	3 1/2 / 2 1/2	1 1/2 / 1 1/2					
Laſhers, 4 — — —	1	10					
Out-Haller — — —	3	9					
Tackle-Fall — —	2	24	Single	7	2		
Strapping — — —	2	1					
Stay — — — —	3 1/2	24	Single	11	1		
Strapping — —	3 1/2	1					
Tacklefall — — —	2	22	Double	7	1		
			Single	7	1		
Strapping — —	2	1					
Hallyard — — —	3	34	Single	10	1		1
Strapping — — —	3	1					
Downhaller — — —	2	30	Single	7	1		
Sheets ſingle, 2 — — —	3 1/2	31	Single	10	2		
Pendants, 1 Pair — —			Single				
SPRITSAIL TOPSAIL.							
Horſes, 2 — — —	2	7					
Braces, 2 — — — —	2	44	Single	7	2		
Strapping — — —	2	1					
Lifts ſingle, 2 — — —	2	32					2
Strapping — — —							
Hallyard — — —	2	24	Single	7	2		
Strapping — — —	2	2 1/2					
Laſhing — — —	1/4	6					
Parrel-Ropes, 2 — — —	2	3	Parrel	10	1		
Clewlines, 2 — — —	1 1/2	40	Single	6	4		
Strapping — — —	1 1/2	1 1/2					
Lacing and Earings, 2 — —	1/4	30					
FORE-MAST.							
Woolding — — —	2 1/2	180					
Girdlines, 2 — — —	3	52	Single	12	2		
Strapping — — —	3 1/2	2					
Seizing — — —	1/4	6					
Laſhings, 2 — — —	1 1/2	15					

32 Gun Ship. 677 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron. Hooks	Iron. Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 1 Pr.	8	9	Sin. Coaked	17	2		4
Strapping — —	5½	3					
Seizing — —	1	7	Double				
Runners of Tackles, 2 —	5½	26	Thin Coak	16	2		
Strapping — —	5	3					
Falls of Tackles, 2 — —	3	70	Single	17	2	2	2
			Thin Coak	12	2	2	2
Strapping —	5	6					
Seizing — —	¼	28					
Shrouds cabled fine, 7 Pair —	8	119	Dead Eyes	13	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1½	67					
End, 14 — —	1	67					
Lanyards fine, 14 — —	8	84					
Ratling — — —	1½	205					
Stay cabled fine 4 Strands —	12	11	Heart	16	1		
Seizings — —	1½	15					
Lanyard fine — —	4	10					
Collar cab. 4 Str. fine doub.	6	6	Heart	16	1		
Seizing, — —	1½	8					
Laſhing — —	2	5					
Preventer Stay cabled 4 Str. fine	7½	11	Heart	12	1		
Lanyard fine —	3½	6					
Coll. cab. 4 Str. fine double —	4½	5	Heart	12	1		
Laſhing —	1½	5					
Seizings —	1½	12					
Catharpin Legs, 4 —	5	8					
Seizings, 8 —	1	32					
Crowfoot for the Top — —	1	75	Euphro	18	1		2
Tackle — —	1	6					
Strapping	1	1					
Jeers { Tye — — — Falls, 2 — — }	5	76	Doub. Coak.	18	4		
Strapping — — —	6	16					
Seizing — — —	1	24					
Laſhing at the Maſt Head —	3	32					
Yard — —	2	9					
Stoppers, 2 — —	2	5					
Horſes, 2 — — — —	4	11½					2
Stirrups, 6 — — —	3	9					
Seizings, 4 — — —		½	of a Tar'Line				
Lanyard 1 — — —	2	3½					
Yard Tackle Pendants, 2 —	5½	7	Do. thin Co.	14	2		
Falls, 2 — —	3	66	Dou. thin Co.	16	2	2	2
			Single	11	2		
Strapping — —	4	7					
Seizing — —	¼	12					
Inner Tric. Lines, 2	2	31	Single	7	2		
Outer Tric. Lines, 2	1½	31	Single	6	4		
Strapping — —	2	6					
Braces, 2 — — —	3½	70	Single Coak.	12	4		
Pendants, 2 — — —	4½	9	Single Coak.	12	2		
Preventer, 2 — —	3½	10					
Strapping — — —	4	4					
Seizing — — —							
Laſhing — — —	1½	18					
Preventers *(in War only)* 2	3	62	Single	11	4		

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron. Hooks	Iron. Thimbles
FORE-MAST CONTINUED.							
Braces Preventer Strapping —	3	3					
Seizing — —							
Lifts, 2 — — — —	3½	82	Single	12	6		
Span for the Cap — —	4½	6½					
Short Span — — —	3½	2½					
Strapping — — —	4	4					
Seizing — — —	¾	14					
Jigger Tackle, No. 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping —	3	4					
Truſs Pendants, 2 — — —	5½	11					4
Falls, 2 — — —	2½	40	Double	9	4	4	4
Strapping — —	3	4					
Eye Seizings, 2 —	1	11					
Nave Line — —	1½	16	Single	6	1		
Puddening the Yard — worn	6	8					
Clew-garnets, 2 — — —	3	52	Sin. Strapbo.	11	4		
			Single	11	2		
Straps ab. the Yard	3	6					
Strapping — —	3	1½					
Seizing — —							
Laſhing — —	1	8					
Buntline Legs, 4 — — —	2½	38	Double	8	4		
Falls, 2 — — — —	2½	38	Single	8	8		
Strapping — — —	2½	8					
Leechline Legs, 2 — — —	2	39	Double	7	4		
Falls, 2 — — — —	2	39	Single	7	8		
Strapping — — —	2½	8					
Slablines, 2 — — —	2	28	Single	7	2		
Strapping — — —	2	1					
Bowlines, 2 — — — —	3½	44	Single	13	4		2
Bridles, 2 — — —	3½	4					
Strapping — — —	3½	4					
Seizing — — —	¼	9					
Laſhing — — —	2	8					
Earings, 6 — — — —	1½	26					
Sheets Cabled, 2 — — —	5	60	Sin. Coaked	17	2		2
Strapping — — —	5	3½					
Seizing — — —	1	12					
Stoppers, 2 — — —	4	4					
Tacks Taper and Cabled, 2 —	6½	32	Shouldered	16	2		
Strapping — — —	5	4½					
Seizing — — —	1	8					
Stoppers, 2 — — —	5	4½				2	2
Lanyards, 2 —	1½	4					
Gammoning the Bumkin, worn —	3½	13				2	6
Lanyards, 2 — — —	1½	8					
Lany. for Pudden & Dolphin —	1	8					4
Slings, 1 Pair — — —	8½	7½					1
Strap — — —	8½	3					
Seizings, 2 — — —	1	14					
Lanyard — — —	2½	6					
Stayſail Hallyard — —	3	25	Single	10	2		
Sheets, 2 — — —	3	22	Single	10	2		
Tack — — —	2	2					
Downhaller — —	2	21	Single	7	1		
Strapping — — —	3	3½					
	2	1½					

32 Gun Ship. 677 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Studd. Sail Hallyard, Inner, 2 Pr.	2	38	Single	9	6		
Outer, 2 Pr.	2½	70	Single	9	4		
Sheets, 2 Pr.	2	12					
Tacks, 2 Pr.	2½	52	Single	9	2		
Strapping	2½	14					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair	4	5					2
Falls, 2	2	44	Double	9	2	2	2
			Single	9	2	2	2
Strapping	3	3½					
Shrouds fine 4 Pr.	5¼	53	Dead Eyes	8	8		
Seizings Eye, 4	¼	16					
Throat, 8	¼	49					
End, 8							
Lanyards fine, 8	2½	40					
Ratling	1	78					
Standing Backstays fine 3 Pr.	5¼	86	Dead Eyes	8	4		
Seizings Eye, 3	¼	12					
Throat, 6	¼	39					
End, 6							
Lanyards fine, 6	2¼	20					
Breast Backstay Runners, 2	3¼	8	Single	11	2		
Falls, 2	2½	18	Double	10	4		
Strapping	3	3					
Stay Cabled 4 Strands fine	5½	17					
Collar fine	5	3	Single	15	1		
Tackle	2¼	18	Long Tackle	18	1		
			Single	9	1		
Strapping	3½	3					
Seizing	1	6					
	¾	6					
Preventer Stay cab. 4 Str. fine	4	17					
Collar, fine	4	3	Single	12	1		
Tackle	2	16	Long Tackle	16	1		
			Single	8	1		
Strapping	3	2½					
Seizing	¼	8					
Lashing the Col.	2	5½					
Shifting Backstays, fine, 1 Pair	5½	28					2
Tackles 4 No.	2½	40	Double	10	4	4	4
			Single	10	4	4	4
Strapping	3½	6					
Futtock Shrouds, fine, 4 Pair	5½	20	Plates with Dead Eyes	8	8	8	8
Seizing Upper, 8	¼	28					
Lower, 8	¼	24					
Ratling	1	26					
Top Rope Pendants, fine, 2	6½	30	Single Iron Bound	18	2		2
Falls, 2	3½	80	Coaked D. Iron Bo.	15	4		
Tye	4½	33	Flat one Side	16	2		
			Doub. Coak.	16	1		
Strapping	4½	6					
Seizing	1	10					
Lashers at the Mast Head, 2	2	9					
Yard	1½	4					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2	3	92	Do. thin Co.	18	2		
			Sin. Ditto	18	2	2	2
Strapping	4	7					
Seizing	⅜	16					
Horses, 2	3½	9½					
Stirrups, 6	3	6					6
Braces, 2	3	73	Single	10	4		
Pendants, 2	3½	8	Single	10	2		
Preventer, 2	3	9					
Strapping	3	5					
Lifts, 2	3	54	Double	10	2		
			Single	10	4		
Beckets, 2	3	2					
Strapping	3	6					
Seizing							
Parrel Ropes, 2	2½	9	Parrel	16	1		
Racking and Seizing	¼	15					
Clewlines, 2	3	70	Sin. Str. bo.	10	4		
			Single	10	2		
Strapping	3	8					
Buntlines, 2	2½	52	Single	8	4		
Strapping	2½	3					
Leechlines, 2	2	22	Single	7	2		
Strapping	2	1					
Bowlines, 2	2½	52	Single	9	2		2
Bridles, 4	2½	9					4
Strapping	2½	1½					
Lashing	1	10					
Reeftackle Pendants, 2	3	35	Double	7	4	2	2
Falls, 2	1½	40					
Strapping	2	2					
Earings, 10	1⅜	36					
Sheets, 2	5½	45	Sin. Shoul.	17	2		
			¼ do. th & thin	17	2		
Straps for Sheet Blocks, 2	6	4	Shivers				
Quarter Blocks, 2	4½	7					
Lashers for Quarter Blocks, 2	2	6					
Seizings, 2	1	18					
Span — worn	3	7					
Stoppers, 2	4½	4					
Slings, 1 Pair	4	7⅓					
Stayfail Stay	3½	19½	Single	11	1		
Tackle	2	15	Double	8	1		
			Single	7	1		
Hallyard	3	32	Single	10	1		
Strapping	3	1½					
Sheets, 2	3	29	Single	10	2		
Strapping	3	1½					
Outhaller	2	16	Single	7	1		
Downhaller	2	24	Single	7	1		
Strapping	2	1½					
Studdingsail Hallyards, 2 Pair	3	84	Single	10	6		
Sheets, 2 Pair	2½	40	Single	10	2		
Tacks, 2 Pair	3	58	Single	10	2		
Downhallers, 2	1½	50	Single	6	2		6
Boom Tackles, 2	2	66	Double	7	2		
			Single	7	4		
Tails and Straps, 2	3	16					
	2	5½					

32 Gun Ship. 677 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	3	60					12
Lanyards, 6 — — —	1½	12					
Standing Backſtays, 2 Pair —	3	70	Dead Eyes	6	4		
Lanyards, 4 — — —	1¼	20					
Stay cabled 4 Strands — —	3¼	22	Single	10	1		
Strapping — — —	2¼	1					
Tackle — — —							
Strapping — — —							
Flagſtaff Stay — — —							
Hallyards, 1 Pair — —	1	24					
Tye — — — — —	3	13					
Hallyard — —	1½	24	Double	6	1		
			Single	6	2		
Strapping — — —	2	1½					
Horſes, 2 — — — —	2½	7					
Braces, 2 — — — —	1½	82	Single	6	4		2
Pendants, 2 — — —	2	8	Single	6	2		
Strapping — — —	2	3					
Lifts ſingle, 2 — — — —	2½	35					2
Strapping — — —							
Parrel Ropes, 2 — — —	1¼	3	Parrel	8	1		
Clewlines, 2 — — —	1½	52	Single	6	4		
Strapping — — —	2	2½					
Bowlines, 2 — — — —	1¼	58					6
Bridles, 2 — — —	1½	3					
Strapping — — —							
Earings, 2 No. — — — —		1½	Tarr'd Line				
Shifting Backſtays, 1 Pair —	3	34					2
Tackles, 2 No. —	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping — —	2	1½					
Studdingſail Hallyards, 2 Pair —	1½	66	Single	6	6		
Sheets, 1 Pair — —	1	17					
Tacks, 2 Pair — —	1½	40	Single	6	4		
Downhallers, 2 No. — —	1	15					1
Strapping — — —	1½	8					
MAIN-MAST.							
Woolding — — —	2½	200					
Girdlines, 2 — — —	3	60	Single	12	2		
Strapping — — —	3¼	2					
Seizing — — —	¾	6					
Laſhings, 2 — — —	1¼	14					
Pendants of Tack. cab. fine, 1 Pr.	8	9½	Sin. Coak.	17	2		4
Strapping —	5½	3					
Seizing —	1	8					
Runners of Tackles, 2 — —	5½	28	Do. thin Co.	16	2		
Strapping — —	5	3					
Falls of Tackles, 2 — — —	3	80	Sin. thin Co.	17	2	2	2
Strapping — —	5	4					
Seizing — —	¾	20					
Shrouds cabled, fine, 7 Pair —	8	136	Dead Eyes	13	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1½	67					
End 14 — — —	1	67					
Lanyards, fine, 14 — —	4	84					
Ratling — — — —	1½	240					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Stay cabled 4 Strands, fine —	12¼	16½	Heart	17	1		
Seizings, 4 — — —	1¼	20					
Lanyard, fine — —	4	14					
Collar cabled 4 Strands, fine	9	7	Heart	17	1		
Worming — —	1	32					
Seizings, 3 — —	1¼	16					
Laſhing — — worn	3	15					
Preventer Stay cab. 4 Strands fine	8½	14	Heart	13	1		
Lanyard, fine —	3	8					
Col. cab. 4 ſtr. fine. do.	5	4½	Heart	13	1		
Laſhing — —	2	5					
Seizings, 3 — —	1	15					
Catharpin Legs, 4 — — —	5	9					
Seizings, 8 — —	1	32					
Stay Tackle Pendant — —	5	4½	Do. thin Co.	14	1		
Falls — — —	3	35	S. thin Co.	16	1	1	2
				12	1	1	1
Strapping — —	4	3					
Seizing — —	¾	12					
Laſhing — —	1¼	10					
Fore-Stay Tackle Fall — —	3	35	Do. thin Co.	14	1		
			S. thin Co.	16	1	1	2
				12	1	1	1
Strapping — —	4	3					
Seizing — —	¾	12					
Crowfoot for the Top — —	1	76	Euphro	18	1		2
Tackle — — —	1	7					
Strapping — —	1	1					
Jeers { Tye — — —	5¼	88	Doub. Coak.	19	4		
Falls, 2 — — —							
Strapping — — —	6	18					
Seizing — — — —	1	24					
Laſhers to the Maſt Head, 2	3	32					
Yard — —	2	12					
Stoppers, 2 — — —	4	6					
Horſes, 2 — — —	4	14					2
Stirrups, 6 — — —	3	11					8
Seizings, 4 — — —							
Lanyard — — —	2	3½	of a Tar'd Line				
Yard Tackle Pendants, 2 —	5½	8	Do. thin Co.	14	2		
Falls, 2 — —	3	76	S. thin Co.	16	2	2	2
			Single	12	2		
Strapping — —	4	7					
Seizing — —	¾	13					
Inner Tricing-Lines, 2	2	33	Single	7	2		
Outer Tricing-Lines, 2	1½	33	Single	6	4		
Strapping — —	2	6					
Braces, 2 — — —	3½	68	Sin. Coak.	12	2		
Pendants, 2 — —	4¼	9	Sin. Coak.	12	2		
Preventer, 2 — —	3½	10					
Strapping — —	4	3					
Seizing — — —							
Preventers *(in War only)* 2	3	66	Single	11	4		
Strapping — —	3	3					
Seizing — — —							
Lifts, 2 — — — —	3½	90					
Span for the Cap — —	5	7					
Short Span — —	3½	2					

32 Gun Ship. 677 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — —	4	4					
Seizing — — —	¼	14					
Jigger Tackles, 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping — —	3	4					
Truss Pendants, 2 — —	5½	13					4
Falls, 2 — — —	2½	48	Double	9	4	4	4
Strapping — —	3	4					
Eye Seizings, 2 —	1	11					
Nave-Line — — —	1½	15	Single	6	1		
Puddening the Yard — worn	6	8					
Clewgarnets, 2 — — —	3	62	Strapbound	12	4		
			Single	12	2		
Strap about the Yard —	3	7					
Strapping — —	3	1½					
Seizing — — —							
Lashing — — —	1	8					
Buntline Legs, 4 — —	2½	38	Double	8	2		
Falls, 2 — — —	2½	44	Single	8	10		
Strapping — —	3	10					
Leechline Legs, 2 — —	2	43	Double	7	4		
Falls, 2 — — —	2	43	Single	7	10		
Strapping — —	3	10					
Slablines, 2 — — —	2	34	Single	7	2		
Strapping — —	2	1					
Bowlines, 2 — — —	3½	42	Double	14	1		4
Bridles, 4 — —	3½	12					2
Strapping — —	3	3½					
Seizing — — —	¼	4					
Lashing — — —	2	4					
Tackle — — —	2	12	Double	9	1	1	1
			Single	9	1	1	1
Strapping — —	2½	2					
Earings, 6 — — —	1½	28					
Sheets, cabled, 2 — —	5½	70	Sin. Coak.	17	4		4
Strapping — —	5½	7½					
Seizing — — —	1	15					
Lashers, 2 — — —	2	6					
Stoppers, 2 — — —	4½	4					
Tacks Taper and Cabled, 2 —	7	34					
Stoppers, 2 — — —	4½	4				2	2
Lanyards, 2 — —	1½	5					
Lany. for the Pudden & Dolphin —	1	8					4
Slings, 1 Pair — — —	8½	8½					
Strap — — — —	8½	3					
Seizing — — —	1	15					
Lanyard — — —	2½	6					
Quarter Tackle Pendants, 2 —	5	9	Do. thin Co.	14	2		
Falls, 2 — —	3	66	S. thin Co.	16	2	2	2
				12	2	2	2
Strapping — —	4	7					
Seizings, 3 — —	¼	13					
Luff Tackles, 4 No. — —	3	120	Double	12	4	4	4
			Single	12	4	4	4
Strapping — —	3½	8					
Seizing — — —	¼	20					
Stayfail Stay — — — worn	3½	10					2
Collar — — —	3	2					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayfail Collar Seizing — —	¾	6					
Lanyard — —	1½	4					
Hallyard, 1 — — —	3	29	Single	10	3	1	1
Sheets, 2 — — —	3	10	Single	10	2	1	1
Tacks, 2 — — —	3	4					
Downhaller — — —	2	16	Single	8	1		
Strapping — — —	3	3					
	2½	1½					
Studd. sail Hallyards, Inn. 2 Pr.	2	46	Single	9	6		
Outer, 2 Pr. —	2½	80	Single	9	4		
Sheets, 2 Pair — —	2	21					
Tacks, 2 Pair — —	2½	42	Single	9	2		
Strapping — — —	2½	16					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	4	6					2
Falls, 2 — — —	2	50	Double	9	2	2	2
			Single	9	2	2	2
Strapping — — —	3	4					
Shrouds, fine, 4 Pair — —	5½	60	Dead Eyes	8	8		
Seizings Eye, 4 — —	¼	16					
Throat, 8 —	¼	49					
End, 8 — —							
Lanyards, fine, 8 — —	2½	40					
Ratling — — —	1	86					
Standing Backstays, fine, 3 Pr. —	5½	97	Dead Eyes	8	4		
Seizings Eye, 3 —	¼	12					
Throat, 6	¼	39					
End, 6							
Lanyards, fine, 6	2½	20					
Breast Backstay Runners, 2 —	3½	8	Single	11	2		
Falls, 2 — — —	2½	18	Double	9	4		
Strapping — —	3	2½					
Stay Cabled 4 Strands, fine —	6	18½					
Collar, fine — — —	5	3	Single	15	1		
Tackle — — —	2½	18	Long Tackle	18	1		
			Single	9	1	1	1
Strapping — — —	3½	3					
Seizing — — —	¾	12					
Lashing — — —	2	6					
Preventer Stay, Cabled 4 str. fine	4½	18					
Collar, fine —	3½	2½	Single	11	1		
Tackle — —	2	16	Long Tackle	16	1		
			Single	9	1	1	1
Strapping —	3	3					
Seizing — —	¾	8					
Lashing the Col. —	1½	6					
Shifting Backstays, fine, 1 Pair —	5½	32					2
Tackles, 4 No. —	2½	40	Double	10	4	4	4
			Single	10	4	4	4
Strapping — —	3½	6					
Futtock Shrouds, fine, 4 Pair —	5½	22	Pla with D. E	8	8	8	8
Seizings Upper, 8 —	¾	28					
Lower, 8 —	¾	24					
Ratling — —	1	26					
Top Rope Pendants, fine, 2	6½	33	Sin. I. bound Brass Shiv.	10	2		2

32 Gun Ship. 677 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2	3½	94	D. I. b. Co.	15	4		
Tye	4½	36	Flatone Side	16	2		
			Double	26	1		
Strapping	4½	6	Coaked				
Seizing	1	10					
Laſhers at the Maſt Head, 2	2	10					
Yard	1½	4					
Hallyards, 2	3	110	Do. thin Co.	18	2		
			S. thin Co.	18	2	2	2
Strapping	4½	6					
Seizing	2½	15					
Horſes, 2	3½	10½					
Stirrups, 6	3	6					6
Braces, 2	3	62	Single	10	2		
Pendants, 2	3½	8	Single	10	2		
Preventers, 2	3	9					
Span ab. the Mizen Maſt	4	4½					
Strapping	3	3					
Lifts, 2	3	60	Double	10	2		
			Single	10	4		
Beckets, 2	3	2½					
Strapping	3	6					
Seizing							
Parrel Ropes, 2	2½	9	Parrel	18	1		
Racking and Seizing	4	16					
Clew-lines, 2	3	78	Sin. Str. Bo.	10	4		
			Single	10	2		
Strapping	3	7					
Bunt-lines, 2	2½	58	Single	8	4		
Strapping	2½	3					
Leech-lines, 2	2	25	Single	7	2		
Strapping	2	1					
Bowlines, 2	3	55	Single	11	2		2
Bridles, 4	3	14					4
Strapping	3½	1½					
Seizing							
Frapping and Laſhing	1½	10					
Reeftackle Pendants, 2	3	39	Double	7	4	2	2
Falls, 2	1½	56					
Strapping	2	2					
Earings, 10	1½	38					
Sheets, 2	6	50	Shoul. Co.	17	2		
			¼ Double	17	2		
Straps for Sheet Blocks, 2	6½	4	Thick & thin				
Quarter Blocks, 2	4½	7					
Laſhers for Quart. Blocks, 2	2	7					
Seizings, 2	1	18					
Span worn	3	7					
Stoppers, 2	4½	4					
Slings, 1 Pair	4	8½					
Stayſail Hallyard	3	35	Single	10	1		
Strapping	3	1					
Sheets, 2	3	30	Single	10	2		
Strapping	3	1½					
Pendant							
Tack	3	4					
Downhaller	2	20	Single	8	2		
Strapping	1½	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2	1½	34	Single	6	2		2
Middle Stayſail Stay	3	20	Single	10	1		
Tackle	2	18	Double	8	1		
			Single	8	1		
Hallyard	2½	34	Single	9	1		
Sheets, 2	2½	34	Single	9	2		
Tack	2	4					
Downhaller	2	23	Single	8	2		
Strapping	2½	6					
Tricing-line							
Studdingſail Hallyards, 2 Pair	3	85	Single	10	6		
Sheets, 2 Pair	2½	40	Single	10	2		
Tacks, 2 Pair	3	58	Single	10	4		
Downhallers, No. 2	1½	53	Single	6	2		6
Boom Tackles, 2 No.	2	66	Double	8	2		
			Single	8	4		
Laſh. for Booms worn	2½	20					
Tailing and Strapping	3	16					
	2	5½					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair	3	66					12
Lanyards, 6	1½	12					
Standing Backſtays, 2 Pair	3	78	Dead Eyes	6	4		
Lanyards, 4	1½	16					
Stay	3½	17½	Single	10	1		
Strapping	3	1					
Flagſtaff Stay							
Hallyards, 1 Pair	1	24					
Tye	3	15					
Hallyard	1½	31	Double	7	1		
			Single	7	2		
Strapping	2	1½					
Horſes, 2	2½	7½					
Braces, 2	1½	67	Single	6	2		
Pendants, 2	2	8	Single	7	2		
Strapping	2	3					
Lifts ſingle, 2	2½	39					2
Strapping							
Parrel Ropes, 2	1½	3	Parrel	9	1		
Clewlines, 2	1½	61	Single	6	6		
Strapping	1½	3					
Bowlines, 2	1½	60	Single	6	2		2
Bridles, 4	1½	6					2
Strapping	1½	1					
Earings, 4	½	of a Tar'Line					
Shifting Backſtays, 1 Pair	3	39					2
Tackles, 2 No.	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping	2	1½					
Stayſail Stay	2½	29	Single	8	1		
Hallyard	2	37	Single	7	1		
Sheets,	2	38	Single	7	2		
Tack	1½	6					
Downhaller	1½	26	Single	6	2		
Strapping	2	2½					

32 Gun Ship. 677 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingsail Hallyards, 2 Pair	2	70	Single	7	6		
Sheets, 2 Pair	1½	36					
Tacks, 2 Pair	2	44	Single	7	4		
Downhallers, 2	1	34					2
Strapping	2	8					
MIZEN-MAST.							
Woolding	2½	80					
Girdlines, 2	2½	50	Single	10	2		
Strapping	2½	1½					
Seizing							
Lashings, 2	1½	8					
Burton Pendants, 1 Pair	4	6					2
Falls, 2	2½	54	Double	9	2	2	2
			Single	9	2	2	2
Strapping	3	3					
Shrouds, fine, 5 Pair	5½	78	Dead Eyes	8	10		
Seizings Eye, 5	1	20					
Throat, 10 / End, 10	¾	58					
Lanyards, fine, 10	2½	50					
Ratling	1	95					
Stay Cabled 4 Strands, fine	6	12½					2
Seizings, 3	1	8					
Lanyard, fine	3	5					
Collar, fine	5	3					1
Seizing	1	3					
Lashing	1½	3					
Crowfoot for the Top	1	50	Euphro	15	1		2
Tackle	1½	5					
Strapping	1½	1					
Jeers, 1 Pair	4	35	Double Co.	16	1		
			Single Co.	16	1		
Strapping	4	6					
Seizing	1	9					
Lashers at the Mast Head	2½	9					
Yard	1½	6					
Derrick	3½	35	Double	12	1		
Span	3½	3	Single	12	1		1
Strapping	3½	2					
Seizing	¾	10					
Lashing	1½	8					
Vang Pendants, 2	3½	10½					
Falls, 2	2	30	Single	8	4	2	2
Strapping	2½	1					
Bowlines, 2	2½	20	Single	9	4		2
Strapping	2½	2					
Truss Pendant	3	4½					2
Falls	2	20	Long Tack.	15	1	1	1
			Single	8	1	1	1
Strapping	2½	3					
Seizing							
Brails Peek Legs, 1 Pr.	2½	11					
Falls	1½	18	Single	6	4		2
Middle	2	22	Single	7	2		
Throat	2½	24	Single	8	2		
Middle	2	21	Single	7	2		
Foot	2	18	Single	7	2		2

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping	2½	8					
Lacing Mizen to Yard	1½	25					
Mast worn	2½	19					
Earings, 2	1½	10					
Peek Hallyards, 1 Pair	1½	22	Single	6	1		1
			Double	11	1		1
Sheet	2	32	Single	11	1		
Strapping	3	3					
Seizing							
Tack	2	3					
Slings, 1 Pair	4	5½					
Stayfail Stay worn	4	13					2
Collar	3	3					1
Seizing	¼	3					
Lashing		3					
Lanyard	1	6					
Hallyard	2½	28	Single	8	3		
Sheets, 2	2½	12	Single	8	2		1
Tack	2½	2					
Downhaller	1½	15	Single	6	2		
Strapping	2½	5					
Brails, 2	2	27	Single	7	2		2
Driver Hallyards, 2 Pair	2½	35	Single	9	4	1	2
Sheets, 2	2½	16	Single	9	2		
Tacks, 2	2½	22	Single	9	2		
Downhaller	1½	18	Single	6	1		
Strapping	2½	6					
Lashing	4	12					
CROSS-JACK-YARD.							
Span about the Cap	3	2					
Braces, 2	2	49	Single	8	2		
Pendants, 2	2½	5	Single	8	2		
Preventer, 2							
Strapping	2	2					
Lifts Running, 2	2	49	Single	8	4		
Strapping	2	2½					
Slings, 1 Pair	3½	4	Single	12	1		
Strapping	3	2					
Seizing	¼	3					
Lashing	1	4					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	3½	33	Dead Eyes	6	6		
Seizings, 6		1½	Tarr'd Line				
Lanyards, 6	2	24					
Ratling	1	44					
Standing Backstays, fine, 1 Pair	3½	25	Dead Eyes	6	2		
Seizings, 4		½	of a Tar'd Line				
Lanyards, fine, 2	2	8					
Stay cabled, 4 Strands, fine	4	11					
Lanyard, fine	2	5					2
Collar	3	2	Single	11	1		
Seizing and Lashing	¼	6					
Flag-staff Stay							
Hallyards, 1 Pair	1	16					
Shifting Backstays, fine, 1 No.	3½	12					1

32 Gun Ship. 677 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backstay Tackle	2	12	Double	7	1	1	1
			Single	7	1	1	1
Strapping	2½	4					
Futtock Shrouds, fine, 3 Pr.	3½	10	Plates with Dead Eyes	6	6	6	6
Seizings, 6		1	Tarr'd-Line				
Ratling	1	11					
Top Rope Pendants, fine, 2	4½	15	Single I. bo.	12	1		1
Falls,	2½	34	Double D°	10	2		
Tye	3½	12	Sin. do. Scord	12	1		
Hallyard	2	38	Double thin	10	1		
			Single thin	10	1	1	1
Strapping	3	3					
Lashing	¾	3					
Horses, 2	2½	7½					
Stirrups, 4	2	4					4
Braces, 2	2	44	Single	7	2		
Pendants, 2	2½	3½	Single	7	2		
Strapping	2	1½					
Lifts, 2	2	45	Single	7	4		
Strapping	2½	3					
Parrel Ropes, 2	2	4	Parrel	11	1		
Clew-lines, 2	2	52	Strap bound	7	4		
			Single	7	2		
Strapping	2	4					
Buntline	1½	38	Single	6	2		
Strapping	1½	1					
Leechlines, 2			Single				
Strapping							
Bow-lines, 2	1½	38	Single	6	2		2
Bridles, 4	1½	6					2
Strapping	1½	1					
Reef Tackle Pendants,							
Falls,							
Strapping							
Earings, 6	1	24					
Sheets, 2	3½	33	Sin. Should.	11	2		
			Double	11	1		
Strapping	4	2					
	3	2½					
Seizing							
Lashing	1	4					
Stayfail Hallyard	2	22	Single	7	1		
Sheets, 2	2	25	Single	7	2		
Tack	2	2					
Downhaller	1	16	Single	5	1		
Strapping	2	1½					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	2	31					8
Lanyards, 4	1	10					
Backstays, 1 Pair	2	31					4
Lanyards, 2	1	6					
Stay	2½	11					1
Lanyard	1	3					
Tye	2	5½					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1½	24	Single	5	2		
Horses, 2	2	5					
Braces, 2	1½	36	Single	5	2		
Lifts, fingle, 2	2	26					
Parrel Ropes, 2	1	3	Parrel	6	1		2
Clew-lines, 2	1½	44	Single	5	2		
Bow-lines, 2	1	40					
Bridles, 4	1	3					4
Earings, 2		1	Tarr'd-Line				
Strapping	1½	3					
NECESSARY ROPES.							
Viol Cabled							
Strapping							
Seizing							
Lashing							
Winding Tackle Pendant	8½	9½	Treble Co.	19	1		
Fall	3½	46	Double	19	1		
			Single	19	1		
Strapping	6	12					
Seizing	1½	14					
Catt Falls, 2	4	66	Treble I. bo. Brass Shiv.	16	2		
Lanyards, 2	2	20	Single and 2 large ragged Staples	8	2		4
Stoppers 2 No.	3½	3					
Guy's Mast-Head, 2	6½	26					
Fore, 2	6½	16					
After, 2	3½	18					
Fish Tackle Pendant	7	8	Single Coaked	18	1	Fish 1	1
Fall	3½	39	Long Tack.	30	2		
Strapping	4½	9					
Seizing	1	16					
Lanyard	2½	14					
Anchor Stock Tacklefall	2½	20	Double	9	1	1	1
			Single	9	1	1	1
Bill Pendant	4	8				1	2
Strapping	3	2					
Seizing							
Stoppers Sheet Anchor, 2	6	6					
Best Bower. 2	6	6					
Small Bower, 2	6	6					
Spare, 2	6	6					
Seizings	¾	21					
Wing cabled, 2 No.	6	14					
Dog, 2 No.	6	14					
Seizing	¾	24					
Stream Anchor, 2	4	4					
Kedge, 2	3	3					
Deck & Bit, cabled, 10 No.	8	27					10
Lanyards, 10 No.	2½	35					
Seizing	1½	28					
	1	28					

32 Gun Ship. 677 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	7	15					
Ditto — — — —	6½	15					
Ditto — — —	6	18					
Ditto — — —	5½	18					
Ditto — — — —	5	6					
Ditto — — — —	4	10					
Ditto — — —	3½	12					
Ditto — — (none.)							
Ditto — (none.)							
Shank painters Sh. Anchor cab.	5½	9					
Beſt Bower, 2 —	5¼	6				1	
Small Bower, 2 —	5	6				1	
Spare, Cabled, 2 —	5	9					
Seizing —	2¼	16					
Ropes Buoy Sheet Anchor cabled	5	24					
Beſt Bower Cabled —	5	24					
Small Bower Cabled —	5	24					
Seizing —	2¼	17					
Stream Anch. Cabled —	3½	30					
Kedge Cabled — —	3	30					
Davit, 2 — — — worn	2½	8					
Bell — — — —	2	2				1	
Buckets — — —		65	Coil Laſhing				
Swab, 2 — worn	3	19	Single	10	2		
Entering, 6 — —	3	18					
Paſſing — —							
Lanyard — —							
Slip — — —							
Quarters, Poop and Stantion in the Waſte, — —	3	98				14	
Fore, Main & Mizen Tops		1	Coil Laſhing				
Wheel or Tiller White —	3½	23	Single	11	2	2	
Strapping — —	3	1½					
Seizing — —							
Puddening of Anchors, worn	3	100	Old Canvas.	yd			
	2	30		15			
Seizings,	1	70					
Slings Buoy, 4 Pair — —	3½	48				6	
Lanyards, 3 — worn	2½	12					
Seizings, 6 —		2	Tarr'd Lines				
Gun — — —	6	6½					
Nut — — —	4½	3½					
But, 4 Pair — —	5	20				4	
Hogſhead, 4 Pair — —	4	16				4	
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys — worn	3½	5					
Swabs — worn	3½	16					
Cable Bends, 6 — —	2	60					
Rudder Pendants, cabled, 2 —	5	8				4	
Lanyards, —							
Falls, — — —			Long Tackle Single				
Strapping — —							
Seizing — — —							
Stern Ladders, 4 Strands, 2 worn	4	18					
Middle Rope, 2 worn	1½	14					
Laſhing — worn	1	9					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 — —	5	6					
	3	2					
Swifters for Capſton-Bars —	2	54					
Laſhing-Cables between Decks							
Sheep-Pens, Steep-Tubs,		2½	Coils Laſhing				
Tubs in the Tops, & Booms							
Nettings for the Quart. Waſte,							
Tops, and Barricadoes —	1	570					
Hallyard for Top Lanthorn —							
Enſigns — —	1	30					
Jacks — —	¼	10					
For Colours — Head Line —		2	White-lines				
Rope Bands —		4 lb	Marlines				
Pendant Slings —	¼	22					
Awnings Ridge and Side Rope —	3	108	Single	10	3		
Stops — — —	1	30					
				26	1		
Crowfeet — —	1	120	Euphro	16	1		
				14	1		
Hallyard — —	1½	36					
			Double	8	1		
Ridge Tackle Fall —	2½	10	Single	8	1		
			Snatch Iron	16	4	4	
For different Uſes of the Ship			Bo. Hooks	13	4	4	4
			Coaked	12	4	4	4
Strapping — —	4	8					
Seizing — —	¼	26					
LONGBOAT.							
Burton Pendants, 1 Pair — —	3½	3	Single	9	2		2
Runner — — —	2½	10					
Falls, — —	2	14	Double	8	2	2	2
			Single	8	2	2	2
Strapping — —	2½	2½					
Shrouds, 2 Pair — —	3	16					4
Lanyards, 4 — —	1	8					
Stay — — — —	3½	5					
Lanyard — —	1	2					
Tye — — — —			Single				
Main Hallyard — —	1½	15	Single	6	1		
			Doub. I. bo.	6	1		
Outer Hallyard —	1½	17	Single	6	1		1
Sheet — — —	1½	10	Single	6	2		1
Wood Hoops, 10							
Downhaller — —	1	13	Single	5	1		
Strapping — —	1½	7					
Topping Lift — —	1½	14					
Fore Hallyard — —	2	12	Single	7	1		
Sheet — — —	2	4					2
Tack — — —	1	1					
Bowline — —	2	1½					
Jib Hallyards — —	2	12	Single	7	1		
Sheet — — —	2	8					
Outhaller — —	2	9	Iron Trave		1		
Innhaller — —	1	6					
Boat-Rope, cabled — —	6	30					
Lanyard — —	2	2					

32 Gun Ship. 677 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	3	30					
Grapnel-Rope, cabled — —	3¼	45					
Painter — — — —	3¼	6					
Sternfaſt — — worn	3	12					
Fenders, cabled, 6 — worn	4	10					
Lanyards, 6 — —	1¼	10					
Rudder Lanyards, 2 — —	1¼	2					
PINNACE.							
Hallyards Main and Fore, 2 —	1¼	10					
Sheets, 4 — — —	1	10					
Grapnel-Rope, cabled — —	3¼	35					
Painter — — —	3¼	5					2
Sternfaſt — — worn	2	5					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5	5				4	6
Seizings, 2 — —	¾	10					
Rudder Lanyards, 2 — —	1	1					
YAWL or CUTTER.							
Hallyards *(if Cutters)* 2 Pair —	1	6	Iron Trave		1		
Sheets, 4 — — —	2	4					
	1¼	4					
Grapnel-Rope, cabled —	3¼	40					
Painter — — —	3¼	5					
Slings, 2 Pair — —	5¼	5				4	6
Seizings, 2 — —	1	10					
Rudder Lanyards, 2 — —	1	1					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each: Thus, in Page 81, Article 2, by Gammoning, 1 —| 5½ | 70 | is meant, One Gammoning are neceſſary, made of Rope 5½ Inches in Circumference, containing in the Whole 70 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
A SHIP OF 28 GUNS,
Being of 594 Tons Burthen.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	2½	75					
Gammonings, 1	5	70					
Shrouds fine, 1 Pair	5	12	Hearts	8	2	2	2
Collars fine, 2	4½	4½	Hearts	8	2		
Seizings, 2		8					
Laſhings, 2	1	6					
Lanyards fine, 2	2	8					
Pobſtays cabled fine 2 Pair	6	16	Hearts	8	2		
Collars fine 2	6	4½	Hearts	8	2		
Seizings, 2		15					
Laſhings, 2	1½	6					
Lanyards fine, 2	3	10					
Horſes, 2	3	13½				6	
Straps, 2	2½	2½				4	
Lanyards, 2	1½	4½					
SPRITSAIL.							
Horſes, 2	3	8½					
Stirrups, 6	2½	4					6
Braces, 2	2½	56	Double	9	4		
Pendants, 2	3	5	Single	9	4		
Strapping	3	8					
Lifts, 2	2½	42	Single	9	4		
Beckets, 2	2	3					
Strapping	2½	3					
Seizing							
Standing, 2	3	6				4	
Straps, 2	3	3					
Lanyards, 2	1	4					
Hallyard	2½	25	Long Tackle	18	1	1	1
			Single	9	1		
Strapping	3	2					
Seizing and Laſhing							
Slings, 1 Pair	4	4					
Seizing and Racking	¾	7					
Clew-Lines, 2	2	29	Strap bound	8	4		
			Single	8	2		
Strapping	2½	4					
Buntlines, 2	1½	20	Single	6	2		
Strapping	1½	1					
Earings, 4	1	12					
Sheets cabled ſingle, 2	3½	29					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
JIBB.							
Horſes, 1	3	14					
Seizings, 2	½	of a Tar' Line					
Guy Pendants, 1 Pair	3½	22	Single	11	2		
Falls, 2	2	25	Single	9	4		
Strapping	3	1½					
Laſhers, 4	2	2					
Out-Haller	3	9					
Tackle-Fall	2	20	Single	7	2		
Strapping	2	1					
Stay	3½	23	Single	11	1		
Strapping	3½	1					
Tacklefall	2	20	Double	7	1		
			Single	7	1		
Strapping	2	1					
Hallyard	2	33	Single	10	1		
Strapping	3	1					
Downhaller	2	28	Single	7	1		
Sheets ſingle, 2	3	29	Single	10	2		
Pendants, 1 Pair			Single				
SPRITSAIL TOPSAIL.							
Horſes, 2	2	7					
Braces, 2	2	43	Single	7	2		
Strapping	2	1					
Lifts ſingle, 2	1½	30					2
Strapping							
Hallyard	2	22	Single	7	2		
Strapping	2	2					
Laſhing							
Parrel-Ropes, 2	1½	3	Parrel	9	1		
Clewlines, 2	1	38	Single	6	4		
Strapping	1	1½					
Lacing and Earings, 2		28					
FORE-MAST.							
Woolding	2½	160					
Girdlines, 2	3	50	Single	11	2		
Strapping	3	1½					
Seizing							
Laſhings, 2	1½	12					

28 Gun Ship. 594 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Iron. Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 1 Pr.	8	7½	Sin. Coaked	16	2		4
Strapping — —	5	3					
Seizing — —	1	7	Double				
Runners of Tackles, 2 —	5¼	25	Thin Coak	16	2		4
Strapping — —	4¾	3					
Falls of Tackles, 2 — —	3	66	Single	16	2	2	2
			Thin Coak	12	2	2	2
Strapping —	4½	5½					
Seizing — —	¾	26					
Shrouds cabled fine, 7 Pair —	8	114	Dead Eyes	12	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1¼	67					
End, 14 — —	1	67					
Lanyards fine, 14 — —	4	77					
Ratling — — —	1¼	200					
Stay cabled fine 4 Strands —	11½	11	Heart	15	1		
Seizings — —	1½	12					
Lanyard fine — —	4	10					
Collar cab. 4 Str. fine doub.	5½	5½	Heart	15	1		
Seizing, — —	1½	7					
Lashing — —	2	5					
Preventer Stay cabled 4 Str. fine	7½	11	Heart	12	1		
Lanyard fine —	3	6					
Coll. cab. 4 Str. fine double —	4½	5	Heart	12	1		
Lashing —	1¼	5					
Seizings —	1	11					
Catharpin Legs, 4 — —	4½	8					
Seizings, 8 —	1	32					
Crowfoot for the Top — —	1	75	Euphro	18	1		2
Tackle — —	1	5					
Strapping	1	1					
Jeers { Tye — — —	8	13	Sing. d. fc	21	3		
Falls, 2 — —	3	84	Treble co.	13	2		
			Double co.	13	2		
	6	31	Single	10	2		
Strapping — —	5	3½					
	3	1					
Seizing — — —	1	20					
Lashing at the Mast Head —	3	30					
Yard — —	2	8					
Stoppers, 2 — —							
Horses, 2 — — — —	4	11					2
Stirrups, 6 — — —	3	9					
Seizings, 4 — — —		½	of a Tar'Line				
Lanyard 1 — — —	1¾	3½					
Yard Tackle Pendants, 2 —	6¼	7	Do. thin Co.	13	2		
Falls, 2 — —	3	64	Dou. thin Co.	15	2	2	2
			Single	11	2		
Strapping — —	4	6½					
Seizing — —	¼	12					
Inner Tric. Lines, 2	2	30	Single	7	2		
Outer Tric. Lines, 2	1½	30	Single	6	4		
Strapping — —	2	6					
Braces, 2 — — —	3	68	Single Coak.	11	4		
Pendants, 2 — — —	4	9	Single Coak.	11	2		
Preventer, 2 — —	3	10					
Strapping — — —	3½	3½					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Iron. Thimbles
FORE-MAST CONTINUED.							
Seizing — — —							
Lashing — — —	1	16					
Preventers (in War only) 2	2½	60	Single	10	4		
Braces Preventer Strapping —	2½	2½					
Seizing — —							
Lifts, 2 — — — —	3½	76	Single	11	6		
Span for the Cap — —	4½	6					
Short Span — — —	3½	2½					
Strapping — — —	3½	3½					
Seizing — — —							
Jigger Tackle, No. 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping —	3	4					
Truss Pendants, 2 — — —	5	10					
Falls, 2 — — —	2	36	Double	8	4	4	4
Strapping — —	2½	3½					
Eye Seizings, 2 —	¾	10					
Nave Line — —	1½	15	Single	6	1		
Puddening the Yard — worn	5½	7					
Clew-garnets, 2 — — —	3	49	Sin. Strapbo.	11	4		
				11	2		
Straps ab. the Yard	3	6					
Strapping — —	3	1½					
Seizing — —							
Lashing — —	¾	8					
Buntline Legs, 4 — — —	2	37	Double	8	4		
Falls, 2 — — — —	2	37	Single	8	8		
Strapping — — —	2½	8					
Leechline Legs, 2 — — —	2	38	Double	7	4		
Falls, 2 — — — —	2	38	Single	7	8		
Strapping — — —	2½	7					
Slablines, 2 — — —	1½	27	Single	6	2		
Strapping — — —	1½	1					
Bowlines, 2 — — — —	3½	42	Single	13	2		2
Bridles, 2 — — —	3½	4					
Strapping — — —	3½	2					
Seizing — — —	¾	6					
Lashing — — —	2	7					
Earings, 6 — — — —	1½	26					2
Sheets Cabled, 2 — — —	5	56	Sin. Coaked	16	2		
Strapping — — —	5	3					
Seizing — — —	¾	12					
Stoppers, 2 — — —	4	4					
Tacks Taper and Cabled, 2 —	6	31	Shouldered	15	2		
Strapping — — —	5	4					
Seizing — — —	¾	8					
Stoppers, 2 — — —	4¼	4½				2	2
Lanyards, 2 — —	1¼	4					
Gammoning the Bumkin, worn —	3	13				2	6
Lanyards, 2 — — —	1½	7					
Lany. for Pudden & Dolphin —	1	7					4
Slings, 1 Pair — — —							1
Strap — — —							
Seizings, 2 — — —							
Lanyard — — —							
Stayfail Hallyard — —	2¾	24	Single	9	2		
Sheets, 2 — — —	2½	20	Single	9	2		
Tack — — —	2	2					
Downhaller — —	1½	18	Single				6

28 Gun Ship. 594 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Strapping — —	2½	3½					
Studd. Sail Hallyard, Inner, 2 Pr.	2	36	Single	9	6		
Outer, 2 Pr. —	2½	66	Single	9	4		
Sheets, 2 Pr. — — —	2	12					
Tacks, 2 Pr. — — —	2½	48	Single	9	2		
Strapping — — —	2½	13					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair —	4	5					2
Falls, 2 — — —	4	42	Double	8	2	2	2
			Single	8	2	2	2
Strapping — — —	2½	3½					
Shrouds fine 4 Pr. — —	5	51	Dead Eyes	8	8		
Seizings Eye, 4 — —	¾	16					
Throat, 8 —	¼	49					
End, 8 — —							
Lanyards fine, 8 — —	2½	40					
Ratling — — — —	1	76					
Standing Backstays fine 3 Pr. —	5	83	Dead Eyes	8	4		
Seizings Eye, 3 —	¾	12					
Throat, 6	¾	39					
End, 6							
Lanyards fine, 6	2½	20					
Breast Backstay Runners, 2 —	3½	18	Single	11	2		
Falls, 2 — —	2	16	Double	8	4		
Strapping — —	2½	2½					
Stay Cabled 4 Strands fine —	5½	16½					
Collar fine — —	5	3	Single	15	1		
Tackle — — —	2½	16	Long Tackle	18	1		
			Single	9	1		
Strapping — —	3½	3					
Seizing — — —	¾	12					
Preventer Stay cab. 4 Str. fine —	4	16½					
Collar, fine — —	4	3	Single	12	1		
Tackle — —	2	14	Long Tackle	16	1		
			Single	8	1		
Strapping — — —	3	2½					
Seizing — — —	¾	7					
Lashing the Col.	1½	5					
Shifting Backstays, fine, 1 Pair —	5	27					2
Tackles 4 No. — —	2	40	Double	8	4	4	4
			Single	8	4	4	4
Strapping — — —	3	6					
Futtock Shrouds, fine, 4 Pair —	5	20	Plates with Dead Eyes	8	8	8	8
Seizing Upper, 8 —	¾	28					
Lower, 8 —	¾	24					
Ratling — —	1	24					
Top Rope Pendants, fine, 2 —	6½	29	Single Iron Bound Coaked	18	2		2
Falls, 2 — — —	3½	85	D. Iron Bo.	15	4		
Tye — — — —	4½	31	Flat S. Co.	16	2		
			Doub. Coak.	16	1		
Strapping — — —	4½	5					
Seizing — — — —	1	9					
Lashers at the Mast Head, 2	2	9					
Yard — — —	1½	4					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2 — — —	2¾	86.	Do. thin Co.	18	2		
			Sin. Ditto	18	2	2	2
Strapping — — —	4	7					
Seizing — — — —		14					
Horses, 2 — — —	3½	8½					
Stirrups, 6 — —	2½	4					4
Braces, 2 — — —	2½	70	Single	9	4		
Pendants, 2 — —	3½	8	Single	9	2		
Preventer, 2 —	2½	9					
Strapping — —	2½	4					
Lifts, 2 — — — —	3	50	Double	10	2		
			Single	10	4		
Beckets, 2 — —	3	2					
Strapping — —	3	6					
Seizing — —							
Parrel Ropes, 2 — —	2½	8	Parrel	16	1		
Racking and Seizing —	¼	12					
Clewlines, 2 — — — —	2½	66	Sin. Str. bo.	9	4		
			Single	9	2		
Strapping — —	2½	7					
Buntlines, 2 — — —	2	48	Single	7	4		
Strapping — —	2	2½					
Leechlines, 2 — — —	1½	20	Single	6	2		
Strapping — —	1½	1					
Bowlines, 2 — —	2½	48	Single	9	2		2
Bridles, 4 — — —	2½	7					4
Strapping — — —	2½	1½					
Lashing — — —	¼	8					
Reeftackle Pendants, 2 —	2½	33	Double	7	4	2	2
Falls, 2 — — —	1½	40					
Strapping — —	2	2					
Earings, 10 — — —	1½	36					
Sheets, 2 — — — —	5	43	Sin. Shoul.	17	2		
			½ do. th & thin	17	2		
Straps for Sheet Blocks, 2	5½	3½	Shivers				
Quarter Blocks, 2 —	4	6					
Lashers for Quarter Blocks, 2	1½	6					
Seizings, 2 — — —	1	18					
Span — — — worn	3	6					
Stoppers, 2 — — —	4	4					
Slings, 1 Pair — — —	3½	7					
Stayfail Stay — — —	3	19	Single	10	1		
Tackle — —	1½	14	Double	7	1		
			Single	6	1		
Hallyard — — —	2½	31	Single	9	1		
Strapping — — —	2½	1½					
Sheets, 2 — — —	2½	27	Single	9	2		
Strapping — — —	2½	1½					
Outhaller — — —	2	14	Single	7	1		
Downhaller — — —	1½	23	Single	6	1		
Strapping — — —	1½	1½					
Studdingsail Hallyards, 2 Pair —	2½	80	Single	9	6		
Sheets, 2 Pair — —	2	36	Single	9	2		
Tacks, 2 Pair — —	2½	56	Single	9	2		
Downhallers, 2 — —	1½	48	Single	6	2		6
Boom Tackles, 2 —	1½	64	Double	6	2		
			Single	6	4		
Tails and Straps, 2 —	2½	15					
	2	5					

28 Gun Ship. 594 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	3	56					12
Lanyards, 6 — — —	1¼	12					
Standing Backſtays, 2 Pair —	3	67	Dead Eyes	6	4		
Lanyards, 4 — — —	1¼	20					
Stay — — —	3¼	21½	Single	10	1		
Strapping — — —	2¼	1					
Tackle — — —							
Strapping — — —							
Flagſtaff Stay — — —							
Hallyards, 1 Pair —	1	23					
Tye — — — — —	3	13					
Hallyard — —	1¼	23	Double	6	1		
			Single	6	2		
Strapping — — —	2	1½					
Horſes, 2 — — — —	2½	6½					
Braces, 2 — — — — —	1¼	78	Single	6	4		2
Pendants, 2 — — —	2	8	Single	6	2		
Strapping — — —	2	3					
Lifts ſingle, 2 — — —	2¼	34					2
Strapping — — —							
Parrel Ropes, 2 — — —	1¼	3	Parrel	8	1		
Clewlines, 2 — — —	1¼	50	Single	6	4		
Strapping — — —	2	2½					
Bowlines, 2 — — — —	1¼	56					6
Bridles, 2 — — —	1¼	3					
Strapping — — —							
Earings, 2 No. — — — —		1½	Tarr'd Line				
Shifting Backſtays, 1 Pair —	3	33					2
Tackles, 2 No. —	1¼	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping — — —	2	1½					
Studdingſail Hallyards, 2 Pair —	1¼	62	Single	6	6		
Sheets, 1 Pair — —	1	16					
Tacks, 2 Pair — —	1¼	38	Single	6	4		
Downhallers, 2 No. — —	1	14					1
Strapping — — —	1¼	8					
MAIN-MAST.							
Woolding — — —	2¼	190					
Girdlines, 2 — — —	3	58	Single	12	2		
Strapping — — —	3	2					
Seizing — — —	¾	6					
Laſhings, 2 — — —	1¼	13					
Pendants of Tack. cab. fine, 1 Pr.	8	9	Sin. Coak.	16	2		4
Strapping —	5½	3					
Seizing —	1	8					
Runners of Tackles, 2 — —	5½	27	Do. thin Co.	16	2		
Strapping — —	5	3					
Falls of Tackles, 2 — — —	3	75	Sin. thin Co.	16	2	2	2
Strapping — —	5	4					
Seizing — —	¾	20					
Shrouds cabled, fine, 7 Pair —	8	131	Dead Eyes	13	4		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1¼	67					
End 14 — — —	1	67					
Lanyards, fine, 14 — —	4	77					
Ratling — — — —	1¼	235					
Stay cabled 4 Strands, fine —	12	16	Heart	17	1		

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stay Seizings, 4 — — —	1¼	16					
Lanyard, fine — —	4	13					
Collar cabled 4 Strands, fine	9	7	Heart	17	1		
Worming — —	1	32					
Seizings, 3 — —	1¼	12					
Laſhing — — worn	3	14					
Preventer Stay cab. 4 Strands fine	8¼	14	Heart	13	1		
Lanyard, fine —	3	8					
Col. cab. 4 ſtr. fine. do.	5	4½	Heart	13	1		
Laſhing — —	2	5					
Seizings, 3 — —	1	15					
Catharpin Legs, 4 — —	4¾	9					
Seizings, 8 — —	1	32					
Stay Tackle Pendant —	5	4	Do. thin Co.	13	1		
Falls — — —	3	34	S. thin Co.	15	1	1	2
				12	1	1	1
Strapping —	4	3					
Seizing —	¾	12					
Laſhing —	1¼	10					
Fore-Stay Tackle Fall — —	3	34	Do. thin Co.	13	1		
			S. thin Co.	15	1	1	2
				12	1	1	1
Strapping —	4	3					
Seizing —	¾	12					
Crowfoot for the Top —	1	76	Euphro	18	1		2
Tackle — —	1	7					
Strapping —	1	1					
Jeers — Tye — —	8	15½	S. d. ſ. c.	21	3		
Falls, 2 — —	3	100	Treble	13	2		
	6	12	Double	13	2		
Strapping — —	5	3½	Single	10	2		
	3¼	1					
Seizing — — —	1	22					
Laſhers to the Maſt Head, 2	3	30					
Yard — —	2	8					
Stoppers, 2 — —							
Horſes, 2 — —	4	13½					2
Stirrups, 6 — —	3	11					8
Seizings, 4 — —			of a Tar'Line				
Lanyard — —	2	3½					
Yard Tackle Pendants, 2	5½	8	Do. thin Co.	13	2		
Falls, 2 — —	3	72	S. thin Co.	15	2	2	2
			Single	12	2		
Strapping —	4	6½					
Seizing —	¾	13					
Inner Tricing-Lines, 2	2	32	Single	7	2		
Outer Tricing-Lines, 2	1¼	32	Single	6	4		
Strapping —	2	6					
Braces, 2 — —	3	66	Sin. Coak.	11	2		
Pendants, 2 —	4	9	Sin. Coak.	11	2		
Preventer, 2 —	3	10					
Strapping —	3½	3					
Seizing — —							
Preventers *(in War only)* 2	2¼	64	Single	9	4		
Strapping —	2½	2½					
Seizing — —							
Lifts, 2 — — —	3¾	86					
Span for the Cap —	5	7					
Short Span —	3½	2					

28 Gun Ship. 594 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — —	4	4					
Seizing — — —							
Jigger Tackles, 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping — —	3	4					
Truſs Pendants, 2 — —	5	12					4
Falls, 2 — — —	4	46	Double	8	4	4	4
Strapping — —	2¾	4					
Eye Seizings, 2 —	1¼	10					
Nave-Line — — —	1½	15	Single	6	1		
Puddening the Yard — worn	5½	7					
Clewgarnets, 2 — — —	3	60	Strapbound	11	4		
			Single	11	2		
Strap about the Yard —	3	7					
Strapping — —	3	1½					
Seizing — — —							
Laſhing — — —	¼	8					
Buntline Legs, 4 — —	2	37	Double	8	2		
Falls, 2 — —	2	43	Single	8	8		
Strapping —	2¼	8					
Leechline Legs, 2 — —	2	42	Double	7	4		
Falls, 2 — —	2	42	Single	7	8		
Strapping — —	2¼	7					
Slablines, 2 — —	1¼	33	Single	6	2		
Strapping — —	1¼	1					
Bowlines, 2 — —	3½	40	Double	14	1		4
Bridles, 4 — —	3½	12					2
Strapping — —	3	3½					
Seizing — — —	¾	4					
Laſhing — — —	2	3½					
Tackle — —	2	12	Double	9	1	1	1
			Single	9	1	1	1
Strapping — —	2¼	2					
Earings, 6 — —	1¼	28					
Sheets, cabled, 2 — —	5	64	Sin. Coak.	16	4		4
Strapping — —	5	7					
Seizing — — —	¾	15					
Laſhers, 2 — — —	1½	6					
Stoppers, 2 — — —	4	4					
Tacks Taper and Cabled, 2 —	6½	33					
Stoppers, 2 — —	4	4				2	2
Lanyards, 2 — —	1¼	4					
Lany. for the Pudden & Dolphin —	1	8					4
Slings, 1 Pair — — —							
Strap — — — —							
Seizing — — —							
Lanyard — — —							
Quarter Tackle Pendants, 2 —	5	9	Do. thin Co.	13	2		
			S. thin Co.	16	2	2	2
Falls, 2 — —	3	62		12	2	2	2
Strapping — —	4	6½					
Seizings, 3 — —	¼	12					
Laff Tackles, 4 No. —	3	100	Double	11	4	4	4
			Single	11	4	4	4
Strapping — —	3½	7					
Seizing — — —							
Stayſail Stay — — — worn	3½	10					2
Collar — — —	3	2					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayſail Collar Seizing — —	1¾	4					
Lanyard — —	1¾	3					
Hallyard, 1 — — —	2	28	Single	10	3	1	1
Sheets, 2 — — —	3	10	Single	10	2	1	1
Tacks, 2 — — —	2½	3½					
Downhaller — — —	2	16	Single	8	1		
Strapping — — —	3	3					
	2½	½					
Studd. ſail Hallyards, Inn. 2 Pr.	2	44	Single	9	6		
Outer, 2 Pr. —	2½	74	Single	9	4		
Sheets, 2 Pair — —	2	20					
Tacks, 2 Pair — —	2½	40	Single	9	2		
Strapping — — —	2½	14					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	4	6					2
Falls, 2 — — —	2	48	Double	8	2	2	2
			Single	8	2	2	2
Strapping — —	2½	3½					
Shrouds, fine, 4 Pair —	5	58	Dead Eyes	8	8		
Seizings Eye, 4 — —	¼	16					
Throat, 8 —	¼	49					
End, 8 — —							
Lanyards, fine, 8 — —	2½	40					
Ratling — — —	1	84					
Standing Backſtays, fine, 3 Pr. —	5	93	Dead Eyes	8	4		
Seizings Eye, 3 —	¼	12					
Throat, 6	¼	39					
End, 6							
Lanyards, fine, 6	2½	20					
Breaſt Backſtay Runners, 2 —	3½	8	Single	11	2		
Falls, 2 — — —	2	16	Double	8	4		
Strapping — —	2½	2½					
Stay Cabled 4 Strands, fine —	6	18					
Collar, fine — — —	5	3	Single	15	1		
Tackle — — —	2½	16	Long Tackle	18	1		
			Single	9	1	1	1
Strapping — — —	3½	3					
Seizing — — —	¼	12					
Laſhing — — —	2	6					
Preventer Stay, Cabled 4 ſtr. fine	4½	17½					
Collar, fine —	3½	2½	Single	11	1		
Tackle — —	2	14	Long Tackle	16	1		
			Single	9	1	1	1
Strapping —	3	3					
Seizing — —	¼	8					
Laſhing the Col. —	1¼	6					
Shifting Backſtays, fine, 1 Pair —	5	31					2
Tackles, 4 No. —	2	40	Double	10	4	4	4
			Single	10	4	4	4
Strapping — —	3½	6					
Futtock Shrouds, fine, 4 Pair —	5	20	Pla with D.E	8	8	8	8
Seizings Upper, 8 —	¼	28					
Lower, 8 —	¼	24					
Ratling — —	1	24					
Top Rope Pendants, fine, 2	6¼	32	Sin. 1. bound	18	2		2

28 Gun Ship. 594 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2	3½	90	D. I. b. Co.	15	4		
Tye	4½	34	Flat one Side	16	2		
			Double	16	1		
Strapping	4½	5½	Coaked				
Seizing	4	10					
Laſhers at the Maſt Head, 2	2	9					
Yard	1½	4					
Hallyards, 2	2½	104	Do. thin Co.	18	2		
			S. thin Co.	18	2	2	2
Strapping	4	6					
Seizing	4½	14					
Horſes, 2	3	10					
Stirrups, 6	2	4					4
Braces, 2	2	60	Single	9	2		
Pendants, 2	3	8	Single	9	2		
Preventers, 2	2½	9					
Span ab. the Mizen Maſt	4	4					
Strapping	2½	3					
Lifts, 2	3	58	Double	10	2		
			Single	10	4		
Beckets, 2	3	2					
Strapping	3	6					
Seizing	4						
Parrel Ropes, 2	2½	9	Parrel	18	1		
Racking and Seizing	4	13					
Clew-lines, 2	2½	74	Sin. Str. Bo.	9	4		
			Single	9	2		
Strapping	2½	7					
Bunt-lines, 2	2½	54	Single	7	4		
Strapping	2	2½					
Leech-lines, 2	1	23	Single	6	2		
Strapping	1½	1					
Bowlines, 2	3	52	Single	11	2		2
Bridles, 4	3	13					4
Strapping	3½	1½					
Seizing	4						
Frapping and Laſhing	1½	10					
Reeftackle Pendants, 2	2½	38	Double	7	4	2	2
Falls, 2	1½	56					
Strapping	2	2					
Earings, 10	1½	38					
Sheets, 2	5½	48	Shoul. Co.	17	2		
			¼ Double	17	2		
Straps for Sheet Blocks, 2	6	3½	Thick & thin				
Quarter Blocks, 2	4½	6					
Laſhers for Quart. Blocks, 2	1½	7					
Seizings, 2	1	18					
Span worn	3	6					
Stoppers, 2	4	4					
Slings, 1 Pair	4	8					
Stayſail Hallyard	3	34	Single	10	1		
Strapping	3	1					
Sheets, 2	3	29	Single	10	2		
Strapping	3	1½					
Pendant	2½						
Tack	2½	3½					
Downhaller	1½	19	Single	6	2		
Strapping	1½	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2	1½	33	Single	6	2		2
Middle Stayſail Stay	3	19½	Single	10	1		
Tackle	2	17	Double	8	1		
			Single	8	1		
Hallyard	2½	32	Single	9	1		
Sheets, 2	2½	32	Single	9	2		
Tack	2	4					
Downhaller	1½	22	Single	8	2		
Strapping	2½	5					
Tricing-line							
Studdingſail Hallyards, 2 Pair	2½	84	Single	9	6		
Sheets, 2 Pair	2	38	Single	9	2		
Tacks, 2 Pair	2½	56	Single	9	4		
Downhallers, No. 2	1½	50	Single	6	2		6
Boom Tackles, 2 No.	1½	64	Double	6	2		
			Single	6	4		
Laſh. for Booms worn	2½	20					
Tailing and Strapping	2½	15					
	2	5					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair	3	63					12
Lanyards, 6	1½	12					
Standing Backſtays, 2 Pair	3	75	Dead Eyes	6	4		
Lanyards, 4	1½	16					
Stay	3½	17	Single				1
Strapping							
Flagſtaff Stay							
Hallyards, 1 Pair	1	24					
Tye	3	14½					
Hallyard	1½	30	Double	6	1		
			Single	6	2		
Strapping	2	1½					
Horſes, 2	2	7					
Braces, 2	1½	65	Single	6	2		
Pendants, 2	2	8	Single	7	2		
Strapping	2	3					
Lifts ſingle, 2	2½	38					2
Strapping							
Parrel Ropes, 2	1½	3	Parrel	9	1		
Clewlines, 2	1½	60	Single	6	6		
Strapping	1½	3					
Bowlines, 2	1½	58	Single	6	2		2
Bridles, 4	1	6					2
Strapping	1½	1					
Earings, 4		½	of a Tar'Line				
Shifting Backſtays, 1 Pair	3	37					2
Tackles, 2 No.	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping	1	1½					
Stayſail Stay	2½	28	Single	8	1		
Hallyard	2	36	Single	7	1		
Sheets,	2	37	Single	7	2		
Tack	1½	6					
Downhaller	1½	25	Single	6	2		
Strapping	2	2					

28 Gun Ship. 594 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	2	68	Single	7	6		
Sheets, 2 Pair	1½	34					
Tacks, 2 Pair	2	43	Single	7	4		
Downhallers, 2	1	32					2
Strapping	2	8					
MIZEN-MAST.							
Woolding	2	75					
Girdlines, 2	2½	46	Single	10	2		
Strapping	2½	1½					
Seizing							
Laſhings, 2	1	8					
Burton Pendants, 1 Pair	4	6					2
Falls, 2	2½	52	Double	9	2	2	2
			Single	9	2	2	2
Strapping	3	3					
Shrouds, fine, 5 Pair	5	76	Dead Eyes	8	10		
Seizings Eye, 5	1	20					
Throat, 10	¾	58					
End, 10							
Lanyards, fine, 10	2½	50					
Ratling	1	92					
Stay Cabled 4 Strands, fine	6	12					2
Seizings, 3	1	8					
Lanyard, fine	3	5					
Collar, fine	5	3					1
Seizing	1	3					
Laſhing	1½	3					
Crowfoot for the Top	1	48	Euphro	14	1		2
Tackle	1¼	5					
Strapping	1½	1					
Jeers, 1 Pair	4	34	Double Co.	14	1		
			Single Co.	14	1		
Strapping	4	5½					
Seizing	¾	9					
Laſhers at the Maſt Head	2¼	8					
Yard	1¼	5					
Derrick	3¼	34	Double	12	1		
Span	3¼	3	Single	12	1		1
Strapping	3¼	2					
Seizing							
Laſhing	1¼	8					
Vang Pendants, 2	3¼	10					
Falls, 2	2	28	Single	8	4	2	2
Strapping	2¼	1					
Bowlines, 2	2¼	18	Single	9	4		2
Strapping	2¼	2					
Truſs Pendant	3	4					2
Falls	1½	19	Long Tack.	14	1	1	1
			Single	6	1	1	1
Strapping	2	2½					
Seizing							
Brails Peek Legs, 1 Pr.	1¾	10					
Falls	1¾	17	Single	6	4		2
Middle	2	21	Single	7	2		
Throat	2½	23	Single	8	2		
Middle	2	20	Single	7	2		
Foot	2	17	Single	7	2		2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping	2½	8					
Lacing Mizen to Yard	1¾	24					
Maſt worn	2¾	18					
Earings, 2	1	10					
Peek Hallyards, 1 Pair	1¾	21	Single	6	1		1
Sheet	3	21	Double	10	1		1
			Single	10	1		
Strapping	3	2½					
Seizing							
Tack	2	3					
Slings, 1 Pair	4	5					
Stayſail Stay worn	4	12½					2
Collar	3	2¾					1
Seizing	¾	3					
Laſhing	¾	3					
Lanyard	1	6					
Hallyard	2¼	27	Single	8	3		
Sheets, 2	2¼	11	Single	8	2		1
Tack	2¼	2					
Downhaller	1¾	14	Single	6	2		
Strapping	2½	4½					
Brails, 2	2	26	Single	7	2		2
Driver Hallyards, 2 Pair	2¼	34	Single	9	4	1	2
Sheets, 2	2¼	15	Single	9	2		
Tacks, 2	2¼	22	Single	9	2		
Downhaller	1¼	17	Single	6	1		
Strapping	2	6					
Laſhing	¾	10					
CROSS-JACK-YARD.							
Span about the Cap	3	2					
Braces, 2	2	45	Single	8	2		
Pendants, 2	2½	5	Single	8	2		
Preventer, 2							
Strapping	2	2					
Lifts Running, 2	2	47	Single	8	4		
Strapping	2	2½					
Slings, 1 Pair	3½	4	Single	11	1		
Strapping	3	2					
Seizing							
Laſhing	1	4					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	3½	32	Dead Eyes	6	6		
Seizings, 6		1½	Tarr'd Line				
Lanyards, 6	2	24					
Ratling	1	43					
Standing Backſtays, fine, 1 Pair	3½	24	Dead Eyes	6	2		
Seizings, 4		½	of a Tar'd Line				
Lanyards, fine, 2	2	8					
Stay cabled, 4 Strands, fine	4	10½					
Lanyard, fine	1½	5					2
Collar	3	2	Single	10	1		
Seizing and Laſhing	½	6					
Flag-ſtaff Stay							
Hallyards, 1 Pair	1	16					
Shifting Backſtays, fine, 1 No.	3½	12					1

28 Gun Ship. 594 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backstay Tackle	2	12	Double	7	1	1	1
			Single	7	1	1	1
Strapping	2½	3½					
Futtock Shrouds, fine, 3 Pr.	3½	9	Plates with Dead Eyes	6	6	6	6
Seizings, 6		1	Tarr'd-Line				
Ratling	1	10					
Top Rope Pendants, fine, 2	4½	14	Single I. bo.	12	1		1
Falls,	2½	30	Double D°	10	2		
Tye	3½	11½	Sin. do. Scord	11	1		
			Double thin	10	1		
Hallyard	2	36	Single thin	10	1	1	1
Strapping	3	2½					
Lashing	¾	3					
Horses, 2	2½	7					
Stirrups, 4	2	2					4
Braces, 2	1½	42	Single	6	2		
Pendants, 2	2	3½	Single	6	2		
Strapping	2	1					
Lifts, 2	2	44	Single	7	4		
Strapping	2½	3					
Parrel Ropes, 2	2	4	Parrel	11	1		
			Strap bound	7	4		
Clew-lines, 2	2	50	Single	7	2		
Strapping	2	4					
Buntline	1½	37	Single	6	2		
Strapping	1½	1					
Leechlines, 2			Single				
Strapping							
Bow-lines, 2	1½	36	Single	6	2		2
Bridles, 4	1½	5					2
Strapping	1½	1					
Reef Tackle Pendants,							
Falls,							
Strapping							
Earings, 6	1	24					
Sheets, 2	3½	32	Sin. Should.	11	2		
			Double	11	1		
Strapping	4	2					
	3	2½					
Seizing							
Lashing	1	4					
Stayfail Hallyard	1½	21	Single	6	1		
Sheets, 2	1½	24	Single	6	2		
Tack	1½	2					
Downhaller	1	15	Single	5	1		
Strapping	1½	1½					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	2	30					8
Lanyards, 4	1	10					
Backstays, 1 Pair	2	30					4
Lanyards, 2	1	6					
Stay	2½	10½					1
Lanyard	1	3					
Tye	2	5½					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1½	23	Single	5	2		
Horses, 2	2	5					
Braces, 2	1½	35	Single	5	2		
Lifts, fingle, 2	2	25					2
Parrel Ropes, 2	1	3	Parrel	6	1		
Clew-lines, 2	1½	43	Single	5	2		
Bow-lines, 2	1	39					
Bridles, 4	1	2½					4
Earings, 2		1	Tarr'd-Line				
Strapping	1½	2½					
NECESSARY ROPES.							
Viol Cabled							
Strapping							
Seizing							
Lashing							
Winding Tackle Pendant							
Fall							
Strapping							
Seizing							
Catt Falls, 2	4	62	Treble I. bo. Coaked	15	2		
Lanyards, 2	2	18	Single				
Stoppers 2 No.	3	3	2 large ragged Staples	8	2		4
Guy's Mast-Head, 2	6	24					
Fore, 2	6	14					
After, 2	3½	16				Fish	
Fish Tackle Pendant	6½	8	Single Coaked	18	1	1	1
Fall	3½	38	Long Tack.	30	2		
Strapping	4	9					
Seizing	1	14					
Lanyard	2½	14					
Anchor Stock Tacklefall	2½	19	Double	9	1	1	1
			Single	9	1	1	1
Bill Pendant	4	8				1	2
Strapping	3	2					
Seizing							
Stoppers Sheet Anchor, 2	6	6					
Best Bower, 2	6	6					
Small Bower, 2	6	6					
Spare, 2	6	6					
Seizings	¾	20					
Wing cabled, 2 No.	6	14					
Dog, 2 No.	6	14					
Seizing	¾	22					
Stream Anchor, 2	4	4					
Kedge, 2	3	3					
Deck & Bit, cabled, 10 No.	8	27					10
Lanyards, 10 No.	2½	35					
Seizing	1½	28					
	1	28					

28 Gun Ship. 594 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	7	15					
Ditto — — — —	6¼	15					
Ditto — — —	6	18					
Ditto — — —	5⅛	18					
Ditto — — — —	5	6					
Ditto — — — —	4	10					
Ditto — — —	3½	12					
Ditto — — (none.) —							
Ditto — (none.) —							
Shank painters Sh. Anchor cab.	5¼	9					
Beſt Bower, 2 —	5⅛	6				1	
Small Bower, 2 —	5	6				1	
Spare, Cabled, 2 —	5	9					
Seizing —	¾	16					
Ropes Buoy Sheet Anchor cabled	5	24					
Beſt Bower Cabled —	5	24					
Small Bower Cabled —	5	24					
Seizing —	¾	16					
Stream Anch. Cabled —	3½	30					
Kedge Cabled — —	3	30					
Davit, 2 — — —worn	2½	8					
Bell — — — —	2	2				1	
Buckets — — —		60	Coil Laſhing				
Swab, 2 — worn	3	18	Single	10	2		
Entering, 6 — —	3	18					
Paſſing — — —							
Lanyard — —							
Slip — — — —							
Quarters, Poop and Stantion in the Waſte, — —	3	96				14	
Fore, Main & Mizen Tops		1	Coil Laſhing				
Wheel or Tiller White —	3½	23	Single	11	2	2	
Strapping — —	3	1½					
Seizing — —							
Puddening of Anchors, worn	3	90	Old Canvas.	yd			
	2	16		15			
Seizings,	1	70					
Slings Buoy, 4 Pair — —	3	48				6	
Lanyards, 3 —worn	2	10					
Seizings, 6 —		2	Tarr'd Lines				
Gun — — —	6	6					
Nut — — —	4	3½					
But, 4 Pair — —	5	15				3	
Hogſhead, 4 Pair — —	4	12				3	
Can-Hook, 2 Pair — —	4¼	6					
Straps for Wood Buoys —worn	3½	5					
Swabs — worn	3½	15					
Cable Bends, 6 — —	2	54					
Rudder Pendants, cabled, 2 —	5	8				4	
Lanyards, —							
Falls, — — —			Long Tackle				
Strapping — —			Single				
Seizing — — —							
Stern Ladders, 4 Strands, 2 worn	4	18					
Middle Rope, 2 worn	1½	14					
Laſhing — worn	1	9					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 — —	5	6					
	3	2					
Swifters for Capſton-Bars —	2	52					
Laſhing-Cables between Decks Sheep-Pens, Steep-Tubs, Tubs in the Tops, & Booms		2	Coils Laſhing				
Nettings for the Quart. Waſte, Tops, and Barricadoes —	1	550					
Hallyard for Top Lanthorn —							
Enſigns — —	1	30					
Jacks — —	¾	10					
For Colours Head Line —		2	White-lines				
Rope Bands —		3½ lb	Marlines				
Pendant Slings —	¼	22					
Awnings Ridge and Side Rope —	3	100	Single	10	3		
Stops — — —	1	28					
				25	1		
Crowfeet — —	1	110	Euphro	15	1		
				13	1		
Hallyard — —	1½	34					
Ridge Tackle Fall —	1½	10	Double	8	1		
			Single	8	1		
For different Uſes of the Ship			Snatch Iron	15	4	4	
			Bo. Hooks	12	4	4	4
			Coaked	11	4	4	4
Strapping — —	3¼	7½					
Seizing — —	¾	25					
LONGBOAT.							
Burton Pendants, 1 Pair — —	3	3	Single	8	2		2
Runner — — —	2½	10					
Falls, — —	2	14	Double	8	2	2	2
			Single	8	2	2	2
Strapping — —	2½	2					
Shrouds, 2 Pair — —	3	14					4
Lanyards, 4 — —	1	7					
Stay — — — —	3½	5					1
Lanyard — —	1	2					
Tye — — — —			Single				
Main Hallyard — —	1½	14	Single	6	1		
Outer Hallyard —	1½	17	Doub. I. bo.	6	1		
			Single	6	1		1
Sheet — — —	1½	10	Single	6	2		1
Wood Hoops, 8 —							
Downhaller — —	1	12					
Strapping — —	1½	6					
Topping Lift — —	1¼	13					
Fore Hallyard — —	1¼	11					
Sheet — — —	1½	4					2
Tack — — —	1	1					
Bowline — —	1¼	1½					
Jib Hallyards — —	1¼	11					
Sheet — — —	1¼	8					
Outhaller — —	1¼	9	Iron Trave		1		
Innhaller — —	¾	5					
Boat-Rope, cabled — —	5½	30					
Lanyard — —	2	2					

28 Gun Ship. 594 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	3	30					
Grapnel-Rope, cabled — —	3¼	45					
Painter — — — —	3¼	6					
Sternfaſt — — worn	2¾	12					
Fenders, cabled, 6 — worn	4	10					
Lanyards, 6 — —	1½	10					
Rudder Lanyards, 2 — —	1	1½					
PINNACE.							
Hallyards Main and Fore, 2 —	1¾	10					
Sheets, 4 — — —	1¾	10					
Grapnel-Rope, cabled — —	3½	35					
Painter — — —	3½	5					2
Sternfaſt — — worn	2	5					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5	5				4	6
Seizings, 2 — —	¾	10					
Rudder Lanyards, 2 — —	1	1					
YAWL or CUTTER.							
Hallyards *(if Cutters)* 2 Pair —	1	6	Iron Trave		1		
Sheets, 4 — — —	2	4					
	1¼	4					
Grapnel-Rope, cabled —	3¼	40					
Painter — — —	3¼	5					2
Slings, 2 Pair — —	5½	5				4	6
Seizings, 2 — —	1	10					
Rudder Lanyards, 2 — —	1	1					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 91, Article 2, by Gammoning, 1 —| 5½ | 70 | is meant, One Gammoning are neceſſary, made of Rope 5½ Inches in Circumference, containing in the Whole 70 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
A SHIP OF 24 GUNS,
Being of 500 Tons Burthen.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	2¼	72					
Gammonings, 1	5	60					
Shrouds fine, 1 Pair	5	11½	Hearts	8	2	2	2
Collars fine, 2	4	4	Hearts	8	2		
Seizings, 2		8					
Laſhings, 2	1	6					
Lanyards fine, 2	2	8					
Bobſtays cabled fine 2 Pair	6	15½	Hearts	8	2		
Collars fine 2	6	4	Hearts	8	2		
Seizings, 2		14					
Laſhings, 2	1	6					
Lanyards fine, 2	3	10					
Horſes, 2	3	13				6	
Straps, 2	2¼	2½				4	
Lanyards, 2	1¼	4					
SPRITSAIL.							
Horſes, 2	3	8					
Stirrups, 6	2¼	3½					6
Braces, 2	2½	54	Double	9	4		
Pendants, 2	3	5	Single	9	4		
Strapping	3	7½					
Lifts, 2	2¾	39	Single	9	4		
Beckets, 2	2¼	3					
Strapping	2½	3					
Seizing							
Standing, 2	3	5½					4
Straps, 2	3	3					
Lanyards, 2	1	3½					
Hallyard	2¼	25	Long Tackle	18	1	1	1
			Single	9	1		
Strapping	3	2					
Seizing and Laſhing							
Slings, 1 Pair	4	4					
Seizing and Racking	¼	6¼					
Clew-Lines, 2	2	26	Strap bound	8	4		
			Single	8	2		
Strapping	2¼	4					
Buntlines, 2	1¾	19	Single	6	2		
Strapping	1¾	1					
Earings, 4	1	12					
Sheets cabled ſingle, 2	3¼	28½					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
JIBB.							
Horſes, 1	3	13					
Seizing		¼	of a Tar' Line				
Guy Pendants, 1 Pair	3½	20	Single	11	2		
Falls, 2	2½	22	Single	9	4		
Strapping	3¼	1½					
Laſhers, 4	1	8					
Out-Haller	2¼	8					
Tackle-Fall	2	18	Single	7	4		
Strapping	2	1					
Stay	3	21	Single	10	1		
Strapping	3	1					
Tacklefall	2	13	Single	7	2		
Strapping	2	1					
Hallyard	2½	30	Single	9	1		
Strapping	2¼	1					
Downhaller	1½	26	Single	6	1		
Sheets ſingle, 2	3	28	Single	10	2		
Pendants, 1 Pair			Single				
SPRITSAIL TOPSAIL.							
Horſes, 2	2	6½					
Braces, 2	2	43	Single	7	2		
Strapping	2	1					
Lifts ſingle, 2	1½	29					2
Strapping							
Hallyard	2	20	Single	7	2		
Strapping	2	1½					
Laſhing							
Parrel-Ropes, 2	1½	3	Parrel	8	1		
Clewlines, 2	1½	37	Single	6	4		
Strapping	1½	1½					
Lacing and Earings, 2		1	Tar' Line				
FORE-MAST.							
Woolding	2½	145					
Girdlines, 2	3	47	Single	11	2		
Strapping	3	1½					
Seizing							
Laſhings	1¼	12					

24 Gun Ship. 500 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Iron. Thimbles.
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 1 Pr.	7½	6¼	Sin. Coaked	15	2		4
Strapping — —	5	2½					
Seizing — —	¼	8	Double				
Runners of Tackles, 2 —	5	23	Thin Coak	15	2		
Strapping — —	4	2½					
Falls of Tackles, 2 — —	3	65	Single	15	2	2	2
			Thin Coak	11	2	2	2
Strapping —	4	4					
Seizing — —	¾	20					
Shrouds cabled fine, 7 Pair —	7½	106	Dead Eyes	11	14		
Seizings Eye, 6 — —	1	30					
Throat, 14 — —	1	63					
End, 14 — —	¾	63					
Lanyards fine, 14 — —	4	70					
Ratling — — —	1½	170					
Stay cabled fine 4 Strands —	11	10½	Heart	14	1		
Seizings, 3 —	1½	11					
Lanyard fine — —	4	10					
Collar cab. 4 Str. fine doub.	5½	5	Heart	14	1		
Seizings, 2 —	1½	6					
Lashing — —	1½	5					
Preventer Stay cabled 4 Str. fine	7	10	Heart	11	1		
Lanyard fine —	3	6					
Coll. cab. 4 Str. fine double —	4	5	Heart	11	1		
Lashing —	1	5					
Seizings, 2 —	1	10					
Catharpin Legs — —	4½	8					
Seizings, 8 —	1	30					
Crowfoot for the Top — —	1	73	Euphro	18	1		2
Tackle — —	1	4					
Strapping	1	1					
Jeers { Tye — — —	7½	12	Sing. d. ſc	20	3		
Falls, 2 Pair —	3	60	Double co.	12	4		
	5½	10½	Single	9	2		
Strapping — —	4	3½					
	3	1					
Seizing — — —	1	22					
Lashing at the Maſt Head —	3	29					
Yard — —	2	8					
Stoppers, 2 — —							
Horſes, 2 — — — —	4	10½					
Stirrups, 6 — — —	3	8½					
Seizings, 4 — —			of a Tar'Line				
Lanyard — — —	1½	3½					
Yard Tackle Pendants, 2 —	3	6½	Do. thin Co.	12	2		
Falls, 2 — —	3	62	Dou. thin Co.	13	2	2	2
			Single	11	2		
Strapping — —	3½	6					
Seizing — —	¼	12					
Inner Tric. Lines, 2	1½	29	Single	6	2		
Outer Tric. Lines, 2	1½	29	Single	6	4		
Strapping — —	1½	5					
Braces, 2 — — —	3	64	Single Coak.	10	4		
Pendants, 2 — — —	4	8½	Single Coak.	10	2		
Preventer, 2 — —	3	9½					
Strapping — — —	3	3					
Seizing — — —							

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks.	Iron. Thimbles.
FORE-MAST CONTINUED.							
Laſhing — — —	¼	14					
Preventers (*in War only*) 2	2½	60	Single	9	4		
Braces Preventer Strapping —	2½	2½					
Seizing — —							
Lifts — — — —	3½	68	Single	11	6		
Span for the Cap — —	4½	5½					
Short Span — — —	3½	2½					
Strapping — — —	3½	3½					
Seizing — — —							
Jigger Tackle, No. 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping —	3	4					
Truſs Pendants, 2 — — —	5	9½					4
Falls, 2 — — —	2	35	Double	8	4	4	4
Strapping — —	2½	3½					
Eye Seizings, 2 —	¾	10					
Nave Line — —	1½	13	Single	6	1		
Puddening the Yard — worn	5	6½					
Clew-garnets, 2 — — —	2½	48	Sin. Strapbo.	9	4		
				9	2		
Straps ab. the Yard	2½	6					
Strapping — —	2½	1					
Seizing — —							
Laſhing — —	¾	7					
Buntline Legs, 4 — — —	2	34	Double	8	4		
Falls, 2 — — — —	2	34	Single	8	8		
Strapping 2 — — —	2½	8					
Leechline Legs, — — —	2	34	Double	7	4		
Falls, 2 — — — —	2	34	Single	7	8		
Strapping — — —	2½	7					
Slablines, 2 — — —	1½	24	Single	6	2		
Strapping — — —	1½	1					
Bowlines, 2 — — — —	3	39	Single	12	2		2
Bridles, 2 — — —	3	4					
Strapping — — —	3	2					
Seizing — — —	¾	6					
Laſhing — — —	1½	7					
Earings, 6 — — — —	1½	26					
Sheets Cabled, 2 — — —	5	53	Sin. Coaked	16	2		2
Strapping — — —	5	3					
Seizing — — —	¾	12					
Stoppers, 2 — — —	4	4					
Tacks Taper and Cabled, 2 —	5½	29	Shouldered	14	2		
Strapping — — —	4½	3½					
Seizing — — —	¼	8					
Stoppers, 2 — — —	4	4				2	2
Lanyards — —	1½	4					
Gammoning the Bumkin, worn —	3	12½				2	6
Lanyards, 2 — — —	1½	6					
Lany. for Pudden & Dolphin —	1	6					4
Slings, 1 Pair — — —							
Strap — — —							
Seizings, 2 — — —							
Lanyard — — —							
Stayſail Hallyard — —	2½	24	Single	9	2		
Sheets, 2 — — —	2½	19	Single	9	2		
Tack — — —	2	2					
Downhaller — —	1½	17	Single			6	1

24 Gun Ship. 500 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-MAST CONTINUED.							
Strapping — —	2½	3½					
Studd. Sail Hallyard, Inner, 2 Pr.	2	34	Single	9	6		
Outer, 2 Pr. —	2½	61	Single	9	4		
Sheets, 2 Pr. — — —	2	11					
Tacks, 2 Pr. — — —	2½	46	Single	9	2		
Strapping — — —	2½	12					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair —	4	4½					2
Falls, 2 — — —	2	38	Double	8	2	2	2
			Single	8	2	2	2
Strapping — — —	2½	3					
Shrouds fine 4 Pr. —	5	49	Dead Eyes of a Tar'Line	8	8		
Seizings Eye, 4 — —		1					
Throat, 8 —	¼	49					
End, 8 — —							
Lanyards fine, 8 — —	2½	40					
Ratling — — — —	1	73					
Standing Backstays fine 3 Pr. —	5	79	Dead Eyes of a Tar'Line	8	4		
Seizings Eye, 3 —		½					
Throat, 6	¼	39					
End, 6							
Lanyards fine, 6	2½	26					
Breast Backstay Runners, 2 —	3½	8	Single	11	2		
Falls, 2 — —	2	14	Double	8	4		
Strapping — —	2½	2½					
Stay Cabled 4 Strands fine —	5½	16					
Collar fine — —	5	3	Single	15	1		
Tackle — — —	2½	16	Long Tackle	18	1		
			Single	9	1		
Strapping — —	3½	3					
Seizing — — —	¼	11					
Preventer Stay cab. 4 Str. fine —	4	16					
Collar, fine — —	4	3	Single	12	1		
Tackle — —	2	14	Long Tackle	16	1		
			Single	8	1		
Strapping — — —	3	2½					
Seizing — — —	¼	6					
Lashing the Col.	1½	5					
Shifting Backstays, fine, 1 Pair —	5	25½					2
Tackles 4 No. — —	2	40	Double	8	4	4	4
			Single	8	4	4	4
Strapping — — —	3	6					
Futtock Shrouds, fine, 4 Pair —	5	18	Plates with Dead Eyes	8	8	8	8
Seizing Upper, 8 —	¾	26					
Lower, 8 —	¾	22					
Ratling — —	1	21					
Top Rope Pendants, fine, 2 —	6½	28	Single Iron Bound	18	2		2
Falls, 2 — — —	3½	80	Coaked D. Iron Bo.	15	4		
Tye — — — —	4½	30	Flat S. Co.	15	2		
			Doub. Coak.	15	1		
Strapping — — —	4½	4½					
Seizing — — — —	¾	9					
Lashers at the Mast Head, 2	2	8					
Yard — — —	1½	3½					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2 — — —	2½	80	Do. thin Co.	17	2		
			Sin. Ditto	17	2	2	2
Strapping — — —	3½	7					
Seizing — — —	¾	12					
Horses, 2 — — —	3½	8					
Stirrups, 6 — —	2½	4					
Braces, 2 — — —	2½	67	Single	9	4		
Pendants, 2 — —	3½	7½	Single	9	2		
Preventer, 2 —	2½	8½					
Strapping — —	2½	4					
Lifts, 2 — — — —	3	48	Sister	17	2		
			Single	10	4		
Beckets, 2 — —	3	2					
Strapping — —	3	6					
Seizing — —							
Parrel Ropes, 2 — —	2½	8	Parrel	16	1		
Racking and Seizing —	¼	10					
Clewlines, 2 — — —	2½	62	Sin. Str. bo.	9	4		
			Single	9	2		
Strapping — —	2½	7					
Buntlines, 2 — —	2	46	Single	7	4		
Strapping — —	2	2½					
Leechlines, 2 — —	1½	19	Single	6	2		
Strapping — —	1½	1					
Bowlines, 2 — —	2½	46	Single	9	2		2
Bridles, 4 — — —	2½	7					4
Strapping — —	2½	1½					
Lashing — —	¼	7					
Reeftackle Pendants, 2 —	2½	3½	Double	7	2		
Falls, 2 — — —	1½	37	Single	7	2	2	2
Strapping — —	2	1½					
Earings, 10 — — —	1½	36					
Sheets, 2 — — — —	5	40	Sin. Shoul.	16	2		
			½ do. th & thin	16	2		
Straps for Sheet Blocks, 2	5½	3					
Quarter Blocks, 2 —	4	6					
Lashers for Quarter Blocks, 2	1½	6					
Seizings, 2 — — —	¼	16					
Span — — — worn	3	5½					
Stoppers, 2 — —	3½	3½					
Slings, 1 Pair — —	3½	6½					
Stayfail Stay — —	3	18	Single	10	1		
Tackle — —	1½	12	Double	7	1		
			Single	6	1		
Hallyard — —	2	29	Single	8	1		
Strapping — —	2	1½					
Sheets, 2 — —	2½	24	Single	9	2		
Strapping — —	2½	1					
Outhaller — —	2	13	Single	7	1		
Downhaller — —	1½	22	Single	6	1		
Strapping — —	1½	1					
Studdingsail Hallyards, 2 Pair —	2½	74	Single	9	6		
Sheets, 2 Pair —	2	33	Single	9	2		
Tacks, 2 Pair —	2½	54	Single	9	2		
Downhallers, 2 —	1½	44	Single	6	2		6
Boom Tackles, 2 —							
Tails and Straps, 2 —	2	4					

24 Gun Ship. 500 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair	3	53					12
Lanyards, 6	1¼	12					
Standing Backstays, 2 Pair	3	64	Dead Eyes	6	4		
Lanyards, 4	1¼	18					
Stay	3½	20	Single	10	1		
Strapping	2½	1½					
Tackle							
Strapping							
Flagstaff Stay							
Hallyards, 1 Pair	¼	22½					
Tye	3	12½					
Hallyard	1¼	21	Double	6	1		
			Single	6	2		
Strapping	2	1½					
Horses, 2	2¼	6					
Braces, 2	2	60	Single	7	4		2
Pendants, 2							
Strapping	2	2					
Lifts single, 2	2¼	32					2
Strapping							
Parrel Ropes, 2	1¾	2½	Parrel	8	1		
Clewlines, 2	1¾	45	Single	6	4		
Strapping	2	2½					
Bowlines, 2	1¾	52					6
Bridles, 2	1¾	3					
Strapping							
Earings, 2 No.		½	Tarr'd Line				
Shifting Backstays, 1 Pair	3	32					2
Tackles, 2 No.	1¾	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping	2	1½					
Studdingsail Hallyards, 2 Pair	1¾	54	Single	6	6		
Sheets, 1 Pair	1	14½					
Tacks, 2 Pair	1¾	36½	Single	6	4		
Downhallers, 2 No.	1	13					1
Strapping	1¾	8					
MAIN-MAST.							
Woolding	2	175					
Girdlines, 2	3	53	Single	11	2		
Strapping	3	1½					
Seizing							
Lashings, 2	1¾	12					
Pendants of Tack. cab. fine, 1 Pr.	7½	7	Sin. Coak.	15	2		4
Strapping	5	2½					
Seizing	¾	7					
Runners of Tackles, 2	5	25	Do. thin Co.	15	2		
Strapping	4	2½					
Falls of Tackles, 2	3	72	Sin. t. Co.	15	2	2	2
				11	2	2	2
Strapping	4	4					
Seizing	¾	18					
Shrouds cabled, fine, 7 Pair	7½	118	Dead Eyes	11	14		
Seizings Eye, 6	1	28					
Throat, 14	1	63					
End 14	¾	63					
Lanyards, fine, 14	4	70					
Ratling	1½	190					
Stay cabled 4 Strands, fine	11½	15½	Heart	16	1		
Seizings, 4	1½	14					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Stay Lanyard, fine	4	12					
Collar cabled 4 Strands, fine	9	7	Heart	16	1		
Worming	1	30					
Seizings, 3	1¼	11					
Lashing — worn	2½	14					
Preventer Stay cab. 4 Strands fine	8	13½	Heart	12	1		
Lanyard, fine	3	8					
Col. cab. 4 str. fine. do.	4½	4	Heart	12	1		
Lashing	2	4					
Seizings, 3	1	12					
Catharpin Legs, 4	4½	8½					
Seizings, 8	1	32					
Stay Tackle Pendant	5	4	Do. thin Co.	12	1		
			S. thin Co.	13	1	1	2
				11	1	1	1
Falls	3	33					
Strapping	4	3					
Seizing	¼	12					
Lashing	1¼	10					
Fore-Stay Tackle Fall	3	33	Do. thin Co.	12	1		
			S. thin Co.	13	1	1	2
				11	1	1	1
Strapping	3½	4					
Seizing							
Crowfoot for the Top	1	74	Euphro	18	1		2
Tackle	1	5					
Strapping	1	1					
Jeers Tye	7½	14	S. d. f. c.	20	3		
Falls, 2	3	74	Double	12	4		
			Single	9	2		
	5½	11½					
Strapping	4	3½					
	3	1					
Seizing	1	20					
Lashers to the Mast Head, 2	3	30					
Yard	2	8					
Stoppers, 2							
Horses, 2	4	12					
Stirrups, 6	3	9½					2
Seizings, 4		½	of a Tar'Line				6
Lanyard 1	2	3½					
Yard Tackle Pendants, 2	5	7½	Do. thin Co.	12	2		
			S. thin Co.	13	2	2	2
Falls, 2	3	68	Single	11	2		
Strapping	3½	6					
Seizing		12					
Inner Tricing-Lines, 2	1	31	Single	6	2		
Outer Tricing-Lines, 2	1	31	Single	6	4		
Strapping	1½	6					
Braces, 2	3	63	Sin. Coak.	10	2		
Pendants, 2	4	8½	Sin. Coak.	10	2		
Preventer, 2	3	9½					
Strapping	3	2½					
Seizing							
Preventers (*in War only*) 2	2½	60	Single	9	4		
Strapping	2½	2½					
Seizing							
Lifts, 2	3½	79	Single	11	6		
Span for the Cap	4½	6					
Short Span	3½	2					

24 Gun Ship. 500 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — —	3½	3½					
Seizing — — —							
Jigger Tackles, 2 —	2	30	Double	8	2		
			Single	8	2		
Strapping —	3	4					
Truſs Pendants, 2 —	5	11½					4
Falls, 2 — —	2	45	Double	8	4	4	4
Strapping —	2½	4					
Eye Seizings, 2	¾	10					
Nave-Line — —	1½	13	Single	6	1		
Puddening the Yard — worn	5½	6½					
Clewgarnets, 2 — — —	2½	57	Strapbound	9	4		
			Single	9	2		
Strap about the Yard	2½	6½					
Strapping —	2½	1					
Seizing — —							
Laſhing — —	¾	7					
Buntline Legs, 4 —	2	35	Double	7	2		
Falls, 2 — —	2	40	Single	7	8		
Strapping —	2½	7½					
Leechline Legs —	2	39	Double	7	4		
Falls, 2 — —	2	39	Single	7	8		
Strapping —	2½	7					
Slablines, 2 — —	1½	31	Single	6	2		
Strapping —	1½	1					
Bowlines, 2 — —	3	39	Double	12	1		4
Bridles, 4 —	3	11½					2
Strapping —	3	3					
Seizing — —	¾	4					
Laſhing — —	1½	3½					
Tackle — —	2	12	Double	8	1	1	1
			Single	8	1	1	1
Strapping —	2	2					
Earings, 6 — —	1½	28					
Sheets, cabled, 2 —	5	60	Sin. Coak.	15	2		2
Strapping —	5	3					
Seizing — —	¾	11					
Laſhers, 2 — —							
Stoppers, 2 — —	4	4					
Tacks Taper and Cabled, 2	6	31					
Stoppers, 2 — —	4	4				2	2
Lanyards, 2 —	1½	4					
Lany. for the Pudden & Dolphin	1	8					4
Slings — — —							
Straps — — —							
Seizing — —							
Lanyard — —							
Quarter Tackle Pendants, 2 —	5	8½	Do. thin Co.	12	2		
Falls, 2 — —	3	60	S. thin Co.	13	2	2	2
			———	11	2	2	2
Strapping — —	4	6					
Seizings, 3 — —							
Luff Tackles, 4 No. — —	3	100	Double	11	4	4	4
			Single	11	4	4	4
Strapping —	3½	7					
Seizing — — —							
Stayſail Stay — — — worn	3½	9½					2
Collar — — —	3	2					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayſail Collar Seizing — —	¼	6					
Lanyard — —	1	3					
Hallyard, 1 — — —	2	26	Single	9	3	1	1
Sheets, 2 — — —	2½	9½	Single	9	2	1	1
Tacks, 2 — — —	2	3					
Downhaller — — —	2	15	Single	8	1		
Strapping — — —	2½	3					
	2	½					
Studd.ſail Hallyards, Inn. 2 Pr.	2	41	Single	9	6		
Outer, 2 Pr. —	2½	68	Single	9	4		
Sheets, 2 Pair — —	2	19					
Tacks, 2 Pair — —	2½	38	Single	9	2		
Strapping — — —	2½	13					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	4	5½					2
Falls, 2 — — —	2	43	Double	8	2	2	2
			Single	8	2	2	2
Strapping — — —	2½	3					
Shrouds, fine, 4 Pair — —	5	54	Dead Eyes of a Tar'Line	8	8		
Seizings Eye, 4 —		1					
Throat, 8 —	¼	49					
End, 8 — —							
Lanyards, fine, 8 — —	2½	40					
Ratling — — —	1	80					
Standing Backſtays, fine, 3 Pr. —	5	87	Dead Eyes of a Tar'Line	8	4		
Seizings Eye, 3 —		½					
Throat, 6	¾	39					
End, 6							
Lanyards, fine, 6	2½	20					
Breaſt Backſtay Runners, 2 —	3½	8	Single	11	2		
Falls, 2 — — —	2	14	Double	8	4		
Strapping — —	2½	2½					
Stay Cabled 4 Strands, fine —	6	17					
Collar, fine — — —	5	3	Single	15	1		
Tackle — — —	2½	16	Long Tackle	18	1		
			Single	9	1	1	1
Strapping — — —	3	2½					
Seizing — — —	¼	10					
Laſhing — — —	2	6					
Preventer Stay, Cabled 4 ſtr. fine	4½	16½					
Collar, fine —	3½	2½	Single	11	1		
Tackle — — —	2	14	Long Tackle	16	1	1	1
			Single	8	1	1	1
Strapping —	3	2½					
Seizing — —	¼	7					
Laſhing the Col. —	1½	6					
Shifting Backſtays, fine, 1 Pair —	5	29					2
Tackles, 4 No. — —	2	40	Double	8	4	4	4
			Single	8	4	4	4
Strapping — —	3	6					
Futtock Shrouds, fine, 4 Pair —	5	19	Pla with D.E	8	8	8	8
Seizings Upper, 8 —	¼	26					
Lower, 8 —	¼	22					
Ratling — —	1	22					
Top Rope Pendants, fine, 2	6½	31	Sin. I. bound	18	2		2

24 Gun Ship. 500 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2	3½	85	D. I. b. Co.	15	4		
Tye	4½	33	Flat one Side	15	2		
			Double	15	1		
Strapping	4½	5	Coaked				
Seizing	¾	9					
Laſhers at the Maſt Head, 2	2	8					
Yard	1½	3½					
Hallyards, 2	2½	95	Do. thin Co.	17	2		
			S. thin Co.	17	2	2	2
Strapping	4	6					
Seizing	½	12					
Horſes, 2	3½	9½					
Stirrups, 6	2½	4					4
Braces, 2	2½	57	Single	9	2		
Pendants	3½	7½	Single	9	2		
Preventers	2½	8½					
Span ab. the Mizen Maſt	4	4					
Strapping	2½	3					
Lifts, 2	3	55	Siſter	17	2		
			Single	10	4		
Beckets, 2	3	2					
Strapping	3	6					
Seizing							
Parrel Ropes, 2	2½	9	Parrel	18	1		
Racking and Seizing	¾	13					
Clew-lines, 2	2½	69	Sin. Str. Bo.	9	4		
			Single	9	2		
Strapping	2½	6½					
Bunt-lines, 2	2	51	Single	7	4		
Strapping	2	2½					
Leech-lines, 2	1½	22	Single	6	2		
Strapping	1½	1					
Bowlines, 2	3	50	Single	11	2		2
Bridles, 4	3	12½					4
Strapping	3½	1½					
Seizing							
Frapping and Laſhing	1½	10					
Reeftackle Pendants, 2	2½	36	Double	7	2		
Falls, 2	1½	49	Single	7	2	2	2
Strapping	2	2					
Earings, 10	1½	36					
Sheets, 2	5½	44	Shoul. Co.	16	2		
			½ Double	16	2		
Straps for Sheet Blocks, 2	6	3½	Thick & thin				
Quarter Blocks, 2	4	5½					
Laſhers for Quart. Blocks, 2	1	7					
Seizings, 2	¾	18					
Span worn	3	5½					
Stoppers, 2	4	4					
Slings, 1 Pair	4	7½					
Stayſail Hallyard	3	32	Single	10	1		
Strapping	3	1					
Sheets, 2	3	29	Single	10	2		
Strapping	3	1½					
Pendant							
Tack	2	3					
Downhaller	1½	18½	Single	6	2		
Strapping	1½	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2	1½	34	Single	6	2		2
Middle Stayſail Stay	3	18	Single	10	1		
Tackle	2	15	Double	8	1		
			Single	8	1		
Hallyard	2½	30	Single	9	1		
Sheets, 2	2½	31	Single	9	2		
Tack	2	4					
Downhaller	1½	21½	Single	7	1		
Strapping	2½	5					
Tricing-line							
Studdingſail Hallyards, 2 Pair	2½	78	Single	9	6		
Sheets, 2 Pair	2	35	Single	9	2		
Tacks, 2 Pair	2½	54	Single	9	2		
Downhallers, No. 2	1½	46	Single	6	2		6
Boom Tackles, 2 No.							
Laſh. for Booms worn	2½	20					
Tailing and Strapping	2½	14					
	2	4					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair	3	60					12
Lanyards, 6	1½	12					
Standing Backſtays, 2 Pair	3	70	Dead Eyes	6	4		
Lanyards, 4	1½	16					
Stay	3½	16	Single				1
Strapping							
Flagſtaff Stay							
Hallyards, 1 Pair	3½	23½					
Tye	3	13½					
Hallyard	1½	26	Double	6	1		
			Single	6	2		
Strapping	2	1½					
Horſes, 2	2½	6½					
Braces, 2	2	50	Single	7	2		
Pendants, 2							
Strapping, 2	2	1					
Lifts ſingle, 2	2½	35					2
Strapping							
Parrel Ropes, 2	1½	3	Parrel	8	1		
Clewlines, 2	1½	48	Single	6	4		
Strapping	1½	2					
Bowlines, 2	1½	54	Single	6	2		2
Bridles, 4	1½	6					2
Strapping	1½	1					
Earings, 4	1½	of a Tar'Line					
Shifting Backſtays, 1 Pair	3	34					
Tackles, 2 No.	1½	14	Double	6	2	2	2
			Single	6	2	2	2
Strapping	2	1½					
Stayſail Stay	2½	27	Single	8	1		
Hallyard	2	34	Single	7	1		
Sheets, 2	2	34	Single	7	2		
Tacks	1½	6					
Downhaller	1½	24	Single	6	2		
Strapping	2	2					

24 Gun Ship. 500 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	2	61	Single	7	6		
Sheets, 2 Pair — —	1½	32					
Tacks, 2 Pair — —	2	42	Single	7	4		
Downhallers, 2 — —	1	31					2
Strapping — — —	2	8					
MIZEN-MAST.							
Woolding — — — —	2	62					
Girdlines, 2 — — —	2½	45	Single	10	2		
Strapping — — —	2½	1½					
Seizing — — — —							
Laſhings, 2 — — —	1	7					
Burton Pendants, 1 Pair —	4	6					2
Falls, 2 — — —	2½	50	Double	9	2	2	2
			Single	9	2	2	2
Strapping — — —	3	3					
Shrouds, fine, 5 Pair — —	5	74	Dead Eyes	8	10		
Seizings Eye, 5 — —		1	Tar' Line				
Throat, 10 —	¾	58					
End, 10 —							
Lanyards, fine, 10 — —	2½	50					
Ratling — — — —	1	84					
Stay Cabled 4 Strands, fine —	6	11½					2
Seizings, 3 — — —	¾	6					
Lanyard, fine — —	3	5					
Collar, fine — —	5	3					1
Seizing — — —	1	3					
Laſhing — — —	1½	3					
Crowfoot for the Top — —	1	47	Euphro	14	1		2
Tackle — — —	1½	5					
Strapping — — —	1	1					
Jeers, 1 Pair — — —	3½	32	Double Co.	13	1		
			Single Co.	13	1		
Strapping — — —	3½	4½					
Seizing — — —	¼	8					
Laſhers at the Maſt Head —	2½	7½					
Yard — —	1½	5					
Derrick — — — —	3	30	Double	11	1		
Span — — — —	3½	3	Single	11	1		1
Strapping — — —	3	2					
Seizing — — — —							
Laſhing — — — —	1	8					
Vang Pendants, 2 — —	3	9					
Falls, 2 — — —	2	26	Single	8	4	2	2
Strapping — —	2½	1					
Bowlines, 2 — — — —	2½	11	Single	8	2		2
Strapping — — —	2	2					
Truſs Pendant — — —	3	3½					2
Falls — — —	1½	18	Long Tack.	14	1	1	1
			Single	6	1	1	1
Strapping — — —	2½	2½					
Seizing — — —							
Brails Peek Legs, 1 Pr. — —	1½	10					
Falls — — —	1½	16	Single	6	4		2
Middle — — —	1½	20					
Throat — — — —	2	21	Single	7	2		
Middle — — —	2	18	Single	7	2		
Foot — — — —	2	15	Single	7	2		2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping — —	2	8					
Lacing Mizen to Yard — —	1½	24					
Maſt — worn	2	17					
Earings, 2 — — — —	1	10					
Peek Hallyards — —	1½	21	Single	6	1		1
Sheet — — — —	3	20	Double	10	1		1
			Single	10	1		
Strapping — — —	3	2½					
Seizing — — — —							
Tack — — — —	1½	3					
Slings, 1 Pair — — — —	4	5					
Stayſail Stay — — —worn	4	12					2
Collar — — —	3	2½					1
Seizing — —	¾	3					
Laſhing — —	1½	3					
Lanyard — —	1	6					
Hallyard — — —	2	26	Single	7	3		
Sheets, 2 — — —	2	11	Single	7	2		1
Tack — — — —	2	2					
Downhaller — — —	1½	13	Single	6	2		
Strapping — —	2	4					
Brails, 2 — — —	2	25	Single	7	2		2
Driver Hallyards, 2 Pair —	2½	30	Single	9	4	1	2
Sheets, 2 — — —	2½	13	Single	9	2		
Tacks, 2 — — —	2½	21	Single	9	2		
Downhaller — — —	1½	16	Single	6	1		
Strapping — — —	2½	6					
Laſhing — — —	¾	10					
CROSS-JACK-YARD.							
Span about the Cap — —	2½	2					
Braces, 2 — — — —	2	43	Single	8	2		
Pendants, 2 — — —	2½	5	Single	8	2		
Preventer, 2 — —							
Strapping — — —	2	2					
Lifts Running, 2 — — —	2	46	Single	8	4		
Strapping — — —	2	2½					
Slings, 1 Pair — — —	3½	4	Single	11	1		
Strapping — — —	3	1½					
Seizing — — — —							
Laſhing — — —	1	4					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair — —	3½	30	Dead Eyes	6	6		
Seizings, 6 — —		½	Tarr'd Line				
Lanyards, 6 — —	2	24					
Ratling — — —	1	42					
Standing Backſtays, fine, 1 Pair —	3½	23	Dead Eyes	6	2		
Seizings, 4 —		½	of a Tar' Line				
Lanyards, fine, 2	2	8					
Stay cabled, 4 Strands, fine —	4	10					
Lanyard, fine — —	1½	5					2
Collar — — — —	3	2	Single	10	1		
Seizing and Laſhing — —	¼	6					
Flag-ſtaff Stay — — —							
Hallyards, 1 Pair — —	½	15					
Shifting Backſtays, fine, 1 No. —	3½	11½					1

24 Gun Ship. 500 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backstay Tackle	2	11	Single	7	1	1	1
			Double	7	1	1	1
Strapping	2½	3					
Futtock Shrouds, fine, 3 Pr.	3½	8½	Plates with Dead Eyes	6	6	6	6
Seizings, 6		1	Tarr'd-Line				
Ratling	1	9					
Top Rope Pendants, fine, 2	4	13	Single I. bo.	12	1		
Falls, 2	2½	28	Double D°	10	2		
Tye	3	10	Single	10	1		
Hallyard	2	34	Double thin	10	1		
			Single thin	10	1	1	1
Strapping	3	2½					
Lashing	¾	3					
Horses, 2	2½	6½					
Stirrups, 4	2	2					2
Braces, 2	1½	40	Single	6	2		
Pendants, 2	2	3½	Single	6	2		
Strapping	1½	1					
Lifts, 2	2	41	Single	7	4		
Strapping	2	3					
Parrel Ropes, 2	2	4	Parrel	11	1		
			Strap bound	7	4		
Clew-lines, 2	2	47	Single	7	2		
Strapping	2	3½					
Buntline	1¾	35	Single	6	2		2
Strapping	1¾	1					
Leechlines, 2	1¾		Single				
Strapping	1¾						
Bow-lines, 2	1¾	33	Single	6	2		2
Bridles, 4	1¾	5					2
Strapping	1¾	1					
Reef Tackle Pendants,							
Falls, — (none)							
Strapping							
Earings, 6	¾	24					
Sheets, 2	3½	30	Sin. Should.	11	2		
			Double	11	1		
Strapping	4	2					
	3	2					
Seizing							
Lashing	¾	4					
Stayfail Hallyard	1¾	20½	Single	6	1		
Sheets, 2	1¾	23	Single	6	2		
Tack	1¾	2					
Downhaller	1	14	Single	5	1		
Strapping	1½	1½					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	2	28					8
Lanyards, 4	1	10					
Backstays, 1 Pair	2	29					4
Lanyards, 2	1	6					
Stay	2½	9½					1
Lanyard	1	3					
Tye	2	5					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1½	22	Single	5	2		
Horses, 2	2	4½					
Braces, 2	1½	33	Single	5	2		
Lifts, single, 2	2	23½					
Parrel Ropes, 2	1	2½	Parrel	6	1		2
Clew-lines, 2	1½	42	Single	5	2		
Bow-lines, 2	1	37					
Bridles, 4	1	2					4
Earings, 2	¼		Tarr'd-Line				
Strapping	1½	2½					
NECESSARY ROPES.							
Viol Cabled							
Strapping							
Seizing							
Lashing							
Winding Tackle Pendant							
Fall							
Strapping							
Seizing							
Catt Falls, 2	3½	58	Treble I. bo. Coaked	15	2		
Lanyards, 2	2	18	Single	8	2		4
Stoppers 2 No.	3½	3	2 large ragged Staples				
Guy's Mast-Head, 2	5½	22					
Fore, 2	5½	12					
After, 2	3½	14					
Fish Tackle Pendant	6	7½	Single Coaked	16	1	1	1
Fall	3½	37	Long Tack.	28	2		
Strapping	4	8½					
Seizing	¼	14					
Lanyard	2½	13					
Anchor Stock Tacklefall	2½	18	Double	9	1	1	1
			Single	9	1	1	1
Bill Pendant	4	7½				1	2
Strapping	3	2					
Seizing							
Stoppers Sheet Anchor, 2	5½	5½					
Best Bower, 2	5½	5½					
Small Bower, 2	5½	5½					
Spare, 2	5½	5½					
Seizings	¾	18					
Wing cabled, 2 No.	5½	13½					
Dog, 2 No.	5½	13½					
Seizing		20					
Stream Anchor, 2	3½	3½					
Kedge, 2	3	3					
Deck & Bit, cabled, 10 No.	7½	24					10
Lanyards, 10 No.	2	30					
Seizing	1	52					

24 Gun Ship. 500 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Copper Preventer — —	6½	13½					
Ditto — — — —	6	13½					
Ditto — — —	5½	15					
Ditto — — —	5	15					
Ditto — — — —	4½	6					
Ditto — — — —	4	9					
Ditto — — —	3½	12					
Ditto — — (none.) —							
Ditto — (none.) —							
Bank painters Sh. Anchor cab. 2	5	8½					
Beſt Bower, 2 —	5	5½				1	
Small Bower, 2 —	5	5½				1	
Spare, Cabled, 2 —	5	8½					
Seizing —	¾	14					
Ropes Buoy Sheet Anchor cabled	4½	24					
Beſt Bower Cabled —	4½	24					
Small Bower Cabled —	4½	24					
Seizing —	¾	16					
Stream Anch. Cabled —	3	30					
Kedge Cabled — —	2½	30					
Davit, 2 — — — worn	2½	7½					
Bell — — — —	2	2				1	
Buckets — — —		57	Coil Laſhing				
Swab, 2 — worn	3	17½	Single	10	2		
Entering, 6 — —	3	17½					
Paſſing — —							
Lanyard — —							
Slip — — — —							
Quarters, Poop and Stantion in the Waſte, — —	3	93				14	
Fore, Main & Mizen Tops		1	Coil Laſhing				
Wheel or Tiller White —	3	22½	Single	10	2	2	
Strapping — —	3	1½					
Seizing — —							
Caldening of Anchors, worn	3	80	Old Canvas.	yd			
	2	25		14			
Seizings,	1	60					
Buoys Buoy, 3 Pair —	3	46				6	
Lanyards, 2 — worn	2	9					
Seizings, 6 —		2	Tarr'd Lines				
Gun — — —	5½	6					
Nut — — —	4	3½					
But, 4 Pair — —	5	15				3	
Hogſhead, 4 Pair — —	4	12				3	
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys — worn	3½	5					
Swabs — worn	3½	15					
Double Bends, 6 — —	2	52					
Boulder Pendants, cabled, 2 —	5	8					
Lanyards, 2 —							
Falls, 2 — — —			Long Tackle Single				
Strapping — —							
Seizing — — —							
Main Ladders, 4 Strands, worn	4	17½					
Middle Rope, 2 worn	1½	13½					
Laſhing — worn	1	8½					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 — —	5	6					
	3	2					
Swifters for Capſton-Bars —	2	51					
Laſhing-Cables between Decks Sheep-Pens, Steep-Tubs, Tubs in the Tops, & Booms		2	Coils Laſhing				
Nettings for the Quart. Waſte, Tops, and Barricadoes —	1	500					
Hallyard for Top Lanthorn							
Enſigns —	1	29					
Jacks —	¼	10					
For Colours Head Line —		1½	White-lines				
For Colours Rope Bands		3 lb	Marlines				
For Colours Pendant Slings	¼	21					
Awnings Ridge and Side Rope	3	98	Single	10	3		
Stops — —	1	24					
				24	1		
Crowfeet — —	1	150	Euphro	14	1		
				12	1		
Hallyard —	1½	33					
Ridge Tackle Fall —	2½	10	Double	7	1		
			Single	7	1		
For different Uſes of the Ship			Snatch Iron	15	4	4	
			Bo. Hooks	12	4	4	4
			Coaked	11	4	4	4
Strapping — —	3½	7½					
Seizing —							
LONGBOAT.							
Burton Pendants, — —	3	3	Single	8	2		2
Runner — —	2½	10					
Falls, 2 — —	2	14	Double	8	2	2	2
			Single	8	2	2	2
Strapping —	2½	2					
Shrouds, 2 Pair —	3	13½					4
Lanyards, 4 —	1	6					
Stay — — —	3½	5					
Lanyard —	1	2					
Tye — — —							
Main Hallyard —	1½	13½	Single	6	1		1
Outer Hallyard —	1½	16½	Doub. I. bo.	6	1		
			Single	6	1		1
Sheet — — —	1½	9½	Single	6	2		1
Wood Hoops, 8							
Downhaller —	1	11					
Strapping —	1½	6					
Topping Lift —	1½	12½					
Fore Hallyard —	1½	10½				4	
Sheet — —	1½	4					2
Tack — —	1	1					
Bowline —	1½	1					
Jib Hallyards —	1½	10½					
Sheet — —	1½	8					
Outhaller —	1½	8½	Iron Trave		1		
Innhaller —	½	5					
Boat-Rope, cabled —	4½	30					
Lanyard — —	2	2					

24 Gun Ship. 500 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	3	30					
Grapnel-Rope, cabled — —	3 1/16	45					
Painter — — — —	3 3/16	6					
Sternfaſt — — worn	2	10					
Fenders, cabled, 6 — worn	4	9 1/2					
Lanyards, 6 — —	1 1/2	9 1/2					
Rudder Lanyards, 2 — —	1	1 1/2					
PINNACE.							
Hallyards Main and Fore, 2 —	1 1/16	10					
Sheets, 4 — — —	1 1/16	10					
Grapnel-Rope, cabled — —	3 3/16	35					
Painter — — —	3 3/16	5					
Sternfaſt — — worn	2	5					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5	5					
Seizings, 2 — —	1/4	10					
Rudder Lanyards, 2 — —	1	1					
YAWL or CUTTER.							
Hallyards (if Cutters) 2 Pair —	1	6	Iron Trave				
Sheets, 4 — — —	2	4					
	1 1/2	4					
Grapnel-Rope, cabled —	3 1/16	40					
Painter — — —	3 3/16	5					
Slings, 2 Pair — —	5 1/2	5					
Seizings, 2 — —	1	10					
Rudder Lanyards, 2 — —	1	1					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 101, Article 2, by Gammoning, 1 —| 5 1/2 | 60 | is meant, One Gammoning are neceſſary, made of Rope 5 1/2 Inches in Circumference, containing in the Whole 60 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
SHIPS OF 22 and 20 GUNS,
Being respectively of 450 and 400 Tons Burthen.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	2½	70					
Gammonings, 1	5	48					
Shrouds fine, 1 Pair	5	11	Hearts	7	2	2	2
Collars fine, 2	4	4	Hearts	7	2		
Seizings, 2	¼	8					
Lashings, 2	1	6					
Lanyards fine, 2	2½	8					
Bobstays cabled fine 2 Pair	6	15	Hearts	7	2		
Collars fine 2	6	4	Hearts	7	2		
Seizings, 2	¼	12					
Lashings, 2	1	6					
Lanyards fine, 2	3	10					
Horses, 2	3	12				6	
Straps, 2	2½	2				4	
Lanyards, 2	1½	4					
SPRITSAIL.							
Horses, 2	3	8					
Stirrups, 6	2½	3				6	
Braces, 2	2	52	Double	9	4		
Pendants, 2	3	5	Single	9	4		
Strapping	3	7					
Lifts, 2	2½	36	Single	9	4		
Beckets, 2	2½	3					
Strapping	2½	2½					
Seizing							
Standing, 2	3	5				4	
Straps, 2	2½	2½					
Lanyards, 2	1	3					
Hallyard	2½	24	Long Tackle	18	1	1	1
			Single	9	1		
Strapping	3	2					
Seizing and Lashing							
Slings, 1 Pair	4	3½					
Seizing and Racking	¼	6					
Clew-Lines, 2	2	22	Strap bound	8	4		
			Single	8	2		
Strapping	2	2					
Buntlines, 2	1½	19	Single	6	2		
Strapping	1½	1					
Earings, 4	1	12					
Sheets cabled fingle, 2	3½	28					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
JIBB.							
Horses, 1	3	12					
Seizing		¼	of a Tar' Line				
Guy Pendants, 1 Pair	3	20	Single	11	2		
Falls, 2	2½	20	Single	9	4		
Strapping	3	1					
Lashers, 4	¼	8					
Out-Haller	2½	7					
Tackle-Fall	2	14	Single	7	4		
Strapping	2	½					
Stay	3	17	Single	10	1		
Strapping	3	1					
Tacklefall	2	12	Single	7	2		
Strapping	2	1					
Hallyard	2½	28	Single	9	1		
Strapping	2½	1					
Downhaller	1½	25	Single	6	1		
Sheets fingle, 2	2½	26	Single	9	2		
Pendants, 1 Pair							
SPRITSAIL TOPSAIL.							
Horses, 2	2	6					
Braces, 2	2	39	Single	7	2		
Strapping	2	1					
Lifts fingle, 2	1½	28					2
Strapping							
Hallyard	2	20	Single	7	2		
Strapping	2	1½					
Lashing							
Parrel-Ropes, 2	1½	3	Parrel	8	1		
Clewlines, 2	1½	32	Single	6	2		
Strapping	1½	1½					
Lacing and Earings, 2		1	Tar' Line				
FORE-MAST.							
Woolding	2½	130					
Girdlines, 2	3	44	Single	10	2		
Strapping	3	1½					
Seizing							
Lashings	1	12					

22 and 20 Gun Ships. 450 and 400 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 1 Pr.	7½	6	Sin. Coaked	15	2		
Strapping — —	5	2½					
Seizing — —	¾	7	Double				
Runners of Tackles, 2	4½	22	Thin Coak	15	2		
Strapping — —	4	2					
Falls of Tackles, 2 — —	3	64	Single	15	2	2	2
			Thin Coak	11	2	2	2
Strapping —	4	4					
Seizing — —	¾	18					
Shrouds cabled fine, 7 Pair	7½	84	Dead Eyes	11	12		
Seizings Eye, 6 —	1	25					
Throat, 14 —	1	58					
End, 14 —	¾	58					
Lanyards fine, 14 —	4	60					
Ratling — —	1½	130					
Stay cabled fine 4 Strands	11	10	Heart	14	1		
Seizings, 3	1½	10					
Lanyard fine —	4	10					
Collar cab. 4 Str. fine doub.	5½	5	Heart	14	1		
Seizings, 2	1½	6					
Lashing — —	1½	5					
Preventer Stay cabled 4 Str. fine	7	10	Heart	11	1		
Lanyard fine	3	6					
Coll. cab. 4 Str. fine double	4	5	Heart	11	1		
Lashing —	1	5					
Seizings, 2 —	1	10					
Catharpin Legs — —	4	8					
Seizings, 8 —	¾	32					
Crowfoot for the Top —	1	72	Euphro	18	1		2
Tackle — —	1	4					
Strapping	1	1					
Jeers { Tye — — —	7½	11	Sing. d. sc	20	3		
Falls, 2 Pair —	3	58	Double co.	12	4		
	5½	10½	Single	9	2		
Strapping — —	4	3½					
	3	1					
Seizing — — —	1	19					
Lashing at the Mast Head —	3	28					
Yard — —	2	8					
Stoppers, 2 — —							
Horses, 2 — — — —	4	10					
Stirrups, 6 — — —	3	8					
Seizings, 4 — — —		½	of a Tar'Line				
Lanyard — — —	1½	3½					
Yard Tackle Pendants, 2 —	5	6	Do. thin Co.	12	2		
			Dou. thin Co.	14	2	2	2
Falls, 2 — —	3	60	Single	10	2		
Strapping — —	3½	6					
Seizing — —	¾	11					
Inner Tric. Lines, 2	1½	28	Single	6	2		
Outer Tric. Lines, 2	1½	28	Single	6	4		
Strapping — —	1½	5					
Braces, 2 — — —	3	60	Single Coak.	10	4		
Pendants, 2 — — —	4	8	Single Coak.	10	2		
Preventer, 2 — —	3	9					
Strapping — — —	3	3					
Seizing — — —							

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Thimbles
FORE-MAST CONTINUED.							
Lashing — — —	¾	12					
Preventers (in War only) 2	2½	54	Single	9	4		
Braces Preventer Strapping —	2½	2½					
Seizing — —							
Lifts — — — —	3	66	Single	10	6		
Span for the Cap — —	4	5					
Short Span — — —	3	2					
Strapping — — —	3	3					
Seizing — — —							
Jigger Tackle, No. 2 —	2	24	Double	8	2		
			Single	8	2		
Strapping —	3	4					
Truss Pendants, 2 — — —	5	9					
Falls, 2 — — —	2	34	Double	8	4	4	4
Strapping — —	2½	3½					
Eye Seizings, 2 —	¾	10					
Nave Line — —	1½	12	Single	6	1		
Puddening the Yard — worn	5	6					
Clew-garnets, 2 — — —	2½	46	Sin. Strapbo.	9	4		
				9	2		
Straps ab. the Yard	2½	6					
Strapping — —	2½	1					
Seizing — —							
Lashing — —	¾	7					
Buntline Legs, 4 — — —	2	30	Double	8	4		
Falls, 2 — — — —	2	30	Single	8	8		
Strapping 2 — — —	2½	8					
Leechline Legs, — — —	2	31	Double	7	4		
Falls, 2 — — — —	2	31	Single	7	4		
Strapping — — —	2½	5					
Slablines, 2 — — —	1½	21	Single	6	2		
Strapping — — —	1½	1					
Bowlines, 2 — — — —	3	37	Single	12	2		2
Bridles, 2 — — —	3	4					
Strapping — — —	3	2					
Seizing — — —	¾	5					
Lashing — — —	1½	7					
Earings, 6 — — — —	1½	26					
Sheets Cabled, 2 — — —	4½	50	Sin. Coaked	15	2		2
Strapping — — —	4½	3					
Seizing — — —	¾	11					
Stoppers, 2 — — —	3½	3					
Tacks Taper and Cabled, 2 —	5½	28	Shouldered	14	2		
Strapping — — —	4½	3½					
Seizing — — —	¾	8					
Stoppers, 2 — — —	4	4				2	2
Lanyards — —	1½	4					
Gammoning the Bumkin, worn —	3	12				2	6
Lanyards, 2 — — —	1	6					
Lany. for Pudden & Dolphin —	1	6					4
Slings, 1 Pair — — —							
Strap — — —							
Seizings, 2 — — —							
Lanyard — — —							
Stayfail Hallyard — —	2½	24	Single	9	2		
Sheets, 2 — — —	2½	19	Single	9	2		
Tack — — —	2	2					
Downhaller — —	1½	16	Single			6	1

22 and 20 Gun Ships. 450 and 400 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Strapping — —	2½	3½					
Studd. Sail Hallyard, Inner, 2 Pr.	2	32	Single	9	6		
Outer, 2 Pr. —	2½	56	Single	9	4		
Sheets, 2 Pr. — — —	2	10					
Tacks, 2 Pr. — — —	2½	44	Single	9	2		
Strapping — — —	2½	12					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair —	3½	4½					2
Falls, 2 — — —	2	34	Double	8	2	2	2
			Single	8	2	2	2
Strapping — — —	2½	3					
Shrouds fine 4 Pr. —	4½	47	Dead Eyes	7	8		
Seizings Eye, 4 —		1	of a Tar'd Line				
Throat, 8 —		2	Tarr'd Line				
End, 8 — —							
Lanyards fine, 8 — —	2½	40					
Ratling — — — —	1	70					
Standing Backstays fine 3 Pr. —	4½	74	Dead Eyes	7	4		
Seizings Eye, 3 —		½	of a Tar'd Line				
Throat, 6		1	Tarr'd Line				
End, 6							
Lanyards fine, 6	2½	20					
Breast Backstay Runners, 2 —	3	8	Single	10	2		
Falls, 2 — —	3	12	Double	7	2		
			Single	7	2		
Strapping — —	2½	2					
Stay Cabled 4 Strands fine —	5	15					
Collar fine — —	4½	3	Single	14	1		
Tackle — — —	2½	16	Long Tackle	16	1		
			Single	8	1		
Strapping — —	3	2½					
Seizing — — —	¾	10					
Preventer Stay cab. 4 Str. fine —	4	15					
Collar, fine — —	3½	2½	Single	11	1		
Tackle — —	2	14	Long Tackle	15	1		
			Single	7	1		
Strapping — — —	3	2½					
Seizing — — —	¾	6					
Lashing the Col.	1	5					
Shifting Backstays, fine, 1 Pair —	4½	24					2
Tackles 4 No. — —	2	20	Double	8	2	2	2
			Single	8	2	2	2
Strapping — — —	3	3					
Futtock Shrouds, fine, 4 Pair —	4½	16	Plates with Dead Eyes	7	8	8	8
Seizing Upper, 8 —	¾	24					
Lower, 8 —	¾	20					
Ratling — —	1	18					
Top Rope Pendants, fine, 2 —	6	27	Single				
			Iron Bound	17	2		2
			Coaked				
Falls, 2 — — —	3	75	D. Iron Bo.	14	4		
Tye — — — —	4	29	Flat S. Co.	15	2		
			Doub. Coak.	15	1		
Strapping — — —	4	4⅓					
Seizing — — — —	¾	9					
Lashers at the Mast Head, 2	1½	9					
Yard — — —	1	4					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards, 2 — — —	2½	74	Do. thin Co.	16	2		
			Sin. Ditto	16	2	2	2
Strapping — —	3¼	6					
Seizing — — —	¾	10					
Horses, 2 — — —	3	8					
Stirrups, 6 — —	2	4					
Braces, 2 — — —	2½	64	Single	9	4		
Pendants, 2 — —	3½	7	Single	9	2		
Preventer, 2 —	2½	8					
Strapping — —	2½	4					
Lifts, 2 — — — — —	2½	46	Double	9	2		
			Single	9	4		
Beckets, 2 — —	2½	2					
Strapping — —	2½	6					
Seizing — —							
Parrel Ropes, 2 — —	2½	8	Parrel	15	1		
Racking and Seizing		½	of a Tar'd Line				
Clewlines, 2 — — — —	2½	58	Sin. Str. bo.	9	4		
			Single	9	2		
Strapping — —	2½	6					
Buntlines, 2 — — —	2	44	Single	7	4		
Strapping — —	2	2½					
Leechlines, 2 — — —	1½	18	Single	6	2		
Strapping — —	1½	1					
Bowlines, 2 — —	2½	44	Single	9	2	2	2
Bridles, 4 — — —	2½	7					4
Strapping — —	2½	1½					
Lashing — —	2½	7					
Reeftackle Pendants, 2 —	2½	30	Single	7	4	2	2
Falls, 2 — — —	1½	34					
Strapping — —	2	1½					
Earings, 10 — — —	1	36					
Sheets, 2 — — — —	4½	36	Sin. Shoul.	15	2		
			½ do. th & thin	15	2		
Straps for Sheet Blocks, 2	5	3					
Quarter Blocks, 2 —	4	5½					
Lashers for Quarter Blocks, 2	1	6					
Seizings, 2 — — —	¾	16					
Span — — — worn	3	5					
Stoppers, 2 — —	3	3					
Slings, 1 Pair — —	3	6					
Stayfail Stay — —	3	17	Single	10	1		
Tackle — —	2	10	Single	8	2		
Hallyard — —	2	27	Single	8	1		
Strapping — —	2	1½					
Sheets, 2 — —	2	22	Single	9	2		
Strapping — —	2½	1					
Outhaller — —	2	12	Single	7	1		
Downhaller — —	1½	20	Single	6	1		
Strapping — —	1½	1					
Studdingsail Hallyards, 2 Pair —	2½	68	Single	9	6		
Sheets, 2 Pair — —	2	30	Single	9	2		
Tacks, 2 Pair — —	2½	52	Single	9	2		
Downhallers, 2 — —	1½	40	Single	6	2		6
Boom Tackles, 2 —							
Tails and Straps, 2 —	2½	14					
	2	4					

22 and 20 Gun Ship. 450 and 400 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	2½	51					12
Lanyards, 6 — — —	1	12					
Standing Backſtays, 2 Pair —	2½	60					4
Lanyards, 4 — — —	1	12					
Stay — — —	3	18					1
Strapping — —	2½	1½					
Tackle — —							
Strapping — —							
Flagſtaff Stay — —							
Hallyards, 1 Pair —	¾	22					
Tye — — — —	2½	12					
Hallyard — — {	1½	18	Single	6	2		
Strapping — —	2	1					
Horſes, 2 — — —	2½	5					
Braces, 2 — — — —	2	58	Single	7	4		2
Pendants, 2 — —							
Strapping — —	2	2					
Lifts ſingle, 2 — —	2½	30					2
Strapping — —							
Parrel Ropes, 2 — —	1½	2½	Parrel	8	1		
Clewlines, 2 — —	1½	40	Single	6	4		
Strapping — —	1½	2					
Bowlines, 2 — — —	1	48					6
Bridles, 2 — —	1	3					
Strapping — —							
Earings, 2 No. — — —		½	Tarr'd Line				
Shifting Backſtays, 1 Pair —	2½	15					1
Tackles, 2 No. — {	1½	7	Single	6	2	2	2
Strapping — —	1½	1					
Studdingſail Hallyards, 2 Pair —	1½	46	Single	6	6		
Sheets, 1 Pair —	1	13					
Tacks, 2 Pair —	1½	35	Single	6	4		
Downhallers, 2 No. —	1	12					1
Strapping — —	1½	8					
MAIN-MAST.							
Woolding — — —	2½	160					
Girdlines, 2 — —	3	48	Single	10	2		
Strapping — —	3	1½					
Seizing — —							
Laſhings, 2 — —	1	12					
Pendants of Tack. cab. fine, 1 Pr.	7½	7	Sin. Coak.	15	2		4
Strapping —	5	2½					
Seizing —	¾	7					
Runners of Tackles, 2 —	4½	24	Do. thin Co.	15	2		
Strapping —	4	2½					
Falls of Tackles, 2 — —	3	68	Sin. t. Co. {	15	2	2	2
				11	2	2	2
Strapping —	4	4					
Seizing —	¾	18					
Shrouds cabled, fine, 7 Pair —	7½	94	Dead Eyes	11	12		
Seizings Eye, 6 —	1	25					
Throat, 14 —	1	58					
End 14 — —	¾	58					
Lanyards, fine, 14 —	4	60					
Ratling — — —	1½	140					
Stay cabled 4 Strands, fine —	1½	15	Heart	16	1		
Seizings, 4 — —	1½	14					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Stay Lanyard, fine — —	4	12					
Collar cabled 4 Strands, fine	8½	6½	Heart	16	1		
Worming — —	1	30					
Seizings, 3 — —	1½	11					
Laſhing — — worn	2½	14					
Preventer Stay cab. 4 Strands fine	8	13	Heart	12	1		
Lanyard, fine —	3	8					
Col. cab. 4 ſtr. fine. do.	4½	4	Heart	12	1		
Laſhing — —	2	5					
Seizings, 3 — —	1	12					
Catharpin Legs, 4 — —	4	8					
Seizings, 8 — —	¾	32					
Stay Tackle Pendant — —	5	3½	Do. thin Co.	12	1		
Falls — — — {	3	32	S. thin Co.	14	1	1	2
				11	1	1	1
Strapping — —	3½	3					
Seizing — —	¾	12					
Laſhing — —	1½	8					
			Do. thin Co.	12	1		
Fore-Stay Tackle Fall — — {	3	32	S. thin Co.	13	1	1	2
				11	1	1	1
Strapping —	3½	3					
Seizing —							
Crowfoot for the Top — —	1	72	Euphro	18	1		2
Tackle — —	1	4					
Strapping — —	1	1					
Jeers { Tye — —	7½	13	S. d. ſ. c.	20	3		
Falls, 2 — —	3	72	Double	12	4		
			Single	9	2		
	5½	11½					
Strapping — —	4	3½					
	3	1					
Seizing — — — —	1	20					
Laſhers to the Maſt Head, 2	3	30					
Yard — —	2	8					
Stoppers, 2 — —							
Horſes, 2 — —	4	11					2
Stirrups, 6 — —	3	8					6
Seizings, 4 — —							
Lanyard 1 — —	1	3½					
Yard Tackle Pendants, 2 —	5	7	Do. thin Co.	12	2		
Falls, 2 — — {	3	64	S. thin Co.	14	2	2	2
			Single	10	2		
Strapping — —	3½	6					
Seizing — —	¾	11					
Inner Tricing-Lines, 2	1½	30	Single	6	2		
Outer Tricing-Lines, 2	1½	30	Single	6	4		
Strapping — —	1½	5					
Braces, 2 — — —	3	60	Sin. Coak.	10	2		
Pendants, 2 — —	4	8	Sin. Coak.	10	2		
Preventer, 2 — —	3	9					
Strapping — —	3	2½					
Seizing — —							
Preventers (*in War only*) 2	2½	58	Single	9	4		
Strapping — —	2½	2½					
Seizing — —							
Lifts, 2 — — — —	3	72	Single	11	6		
Span for the Cap — —	4½	5½					
Short Span — —	3½	2					

22 and 20 Gun Ship. 450 and 400 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — —	3½	3½					
Seizing — — —							
Jigger Tackles, 2 —							
Strapping — —							
Truſs Pendants, 2 — —	5	11					4
Falls, 2 — — —	2	44	Double	8	4	4	4
Strapping — —	2¼	4					
Eye Seizings, 2 —	¼	10					
Nave-Line — —							
Puddening the Yard — worn	5	6					
Clewgarnets, 2 — — —	2½	54	Strapbound	9	4		
			Single	9	2		
Strap about the Yard —	2¾	6					
Strapping — —	2¾	1					
Seizing — — —							
Laſhing — — —	¾	7					
Buntline Legs, 4 — —	2	33	Double	7	2		
Falls, 2 — — —	2	37	Single	7	8		
Strapping — —	2¼	7					
Leechline Legs — —	2	37	Double	7	4		
Falls, 2 — — —	2	37	Single	7	4		
Strapping — —	2¼	5					
Slablines, 2 — —	1¾	28	Single	6	2		
Strapping — —	1¾	1					
Bowlines, 2 — —	3	38	Double	12	1		4
Bridles, 4 —	3	11					2
Strapping — —	3	3					
Seizing — — —	¼	4					
Laſhing — — —	1½	3					
Tackle — —	2	12	Double	8	1	1	1
			Single	8	1	1	1
Strapping —	2	2					
Earings, 6 — —	1½	27					
Sheets, cabled, 2 —	5	56	Sin. Coak.	15	2		2
Strapping — —	5	3					
Seizing — — —	¾	11					
Laſhers, 2 — —							
Stoppers, 2 — —	3½	3					
Tacks Taper and Cabled, 2 —	6	30					
Stoppers, 2 — —	4	4				2	2
Lanyards, 2 — —	1½	4					
Lany. for the Pudden & Dolphin —	1	7					4
Slings — — —							
Straps — — —							
Seizing — — —							
Lanyard — —							
Quarter Tackle Pendants, 2 —	5	8	Do. thin Co.	12	2		
Falls, 2 — —	3	58	S. thin Co.	14	2	2	2
				11	2	2	2
Strapping — —	4	6					
Seizings, 3 —							
Luff Tackles, 4 No. — —	2½	60	Double	10	3	3	3
			Single	10	3	3	3
Strapping — —	3	6					
Seizing — — —							
Stayſail Stay — — — worn	3	9					2
Collar — — —	3	2					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayſail Collar Seizing — —	¼	6					
Lanyard — —	1	2					
Hallyard, 1 — — —	2¼	24	Single	9	3	1	1
Sheets, 2 — — —	2¼	9	Single	9	2	1	1
Tacks, 2 — — —	2	2½					
Downhaller — — —	2	14	Single	8	1		
Strapping — — —	2¼	3					
	2	½					
Studd. ſail Hallyards, Inn. 2 Pr.	2	38	Single	9	6		
Outer, 2 Pr. —	2¼	62	Single	9	4		
Sheets, 2 Pair — —	2	18					
Tacks, 2 Pair — —	2¾	36	Single	9	2		
Strapping — — —	2¼	12					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	3½	5½					2
Falls, 2 — — —	3	38	Double	8	2	2	2
			Single	8	2	2	2
Strapping — —	2¼	3					
Shrouds, fine, 4 Pair — —	4½	51	Dead Eyes	7	8		
Seizings Eye, 4 —		1	of a Tar'Line				
Throat, 8 —		2	Tar Lines				
End, 8 — —							
Lanyards, fine, 8 —	2¼	40					
Ratling — — —	1	76					
Standing Backſtays, fine, 3 Pr. —	4½	81	Dead Eyes	7	4		
Seizings Eye, 3 —		½	of a Tar'Line				
Throat, 6		½	of a Tar'Line				
End, 6							
Lanyards, fine, 6	2¼	20					
Breaſt Backſtay Runners, 2 —	3	8	Single	10	2		
Falls, 2 — —	2	12	Double	7	2		
			Single	7	2		
Strapping — —	2¼	2					
Stay Cabled 4 Strands, fine —	5½	15½	Single	15	1		
Collar, fine — — —	4½	3	Long Tackle	16	1		
Tackle — — —	2½	16	Single	8	1	1	1
Strapping — —	3	2½					
Seizing — — —	¼	10					
Laſhing — — —	1½	6					
Preventer Stay, Cabled 4 ſtr. fine	4	15					
Collar, fine —	3½	2½	Single	11	1		
Tackle — —	2	14	Long Tackle	15	1	1	1
			Single	7	1	1	1
Strapping —	3	2½					
Seizing — —	¼	7					
Laſhing the Col. —	1	5					
Shifting Backſtays, fine, 1 Pair —	4½	27					2
Tackles, 4 No. —	2	20	Double	8	2	2	2
			Single	8	2	2	2
Strapping — —	3	3					
Futtock Shrouds, fine, 4 Pair —	4½	17½	Pla with D. E	7	8	8	8
Seizings Upper, 8 —	¾	24					
Lower, 8 —	¼	20					
Ratling — —	1	20					
Top Rope Pendants, fine, 2	6	30	Sin. I. bound	17	2		2

22 and 20 Gun Ships. 450 and 400 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2	3	80	D. I. b. Co.	14	4		
Tye	4	32	Flat one Side	15	2		
			Double	15	1		
Strapping	4	5					
Seizing		9					
Laſhers at the Maſt Head, 2		9					
Yard	1	4					
Hallyards, 2		86	Do. thin Co.	16	2		
			S. thin Co.	16	2	2	2
Strapping		6					
Seizing		10					
Horſes, 2	3	9					
Stirrups, 6	2	4					4
Braces, 2		54	Single	9	2		
Pendants		7	Single	9	2		
Preventers		8					
Span ab. the Mizen Maſt	4	4					
Strapping		3					
Lifts, 2		52	Double	9	2		
			Single	9	4		
Beckets, 2		2					
Strapping		6					
Seizing							
Parrel Ropes, 2		8½	Parrel	17	1		
Racking and Seizing		½	of a Tar'Line				
Clew-lines, 2		64	Sin. Str. Bo.	9	4		
			Single	9	2		
Strapping		6					
Bunt-lines, 2	2	48	Single	7	4		
Strapping	2	2½					
Leech-lines, 2		20	Single	6	2		
Strapping		1					
Bowlines, 2	3	48	Single	11	2		2
Bridles, 4	3	12					4
Strapping	3	1½					
Seizing							
Frapping and Laſhing		9					
Reeftackle Pendants, 2		34	Single	7	4	2	2
Falls, 2		42					
Strapping	2	1½					
Earings, 10	1	38					
Sheets, 2	5	40	Shoul. Co.	15	2		
			¼ Double	15	2		
Straps for Sheet Blocks, 2		3	Thick & thin				
Quarter Blocks, 2	4	5					
Laſhers for Quart. Blocks, 2	1	6					
Seizings, 2		16					
Span worn	3	5					
Stoppers, 2	3	3					
Slings, 1 Pair		7					
Stayſail Hallyard		30	Single	9	1		
Strapping		1					
Sheets, 2		28	Single	9	2		
Strapping		1½					
Pendant							
Tack	2	3					
Downhaller		18	Single	6	2		
Strapping		1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails, 2		31	Single	6	2		
Middle Stayſail Stay	3	16	Single	10	1		2
Tackle	2	10	Single	8	2		
Hallyard		28	Single	9	1		
Sheets, 2		31	Single	9	2		
Tack	2	4					
Downhaller		21	Single	6	1		
Strapping		4½					
Tricing-line							
Studdingſail Hallyards, 2 Pair		72	Single	9	6		
Sheets, 2 Pair	2	32	Single	9	2		
Tacks, 2 Pair		52	Single	9	2		
Downhallers, No. 2		42	Single	6	2		6
Boom Tackles, 2 No.							
Laſh. for Booms worn	2	20					
Tailing and Strapping		14					
	2	4					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair		57					12
Lanyards, 6	1	12					
Standing Backſtays, 2 Pair		65					4
Lanyards, 4	1	12					
Stay	3	15					1
Strapping							
Flagſtaff Stay							
Hallyards, 1 Pair		23					
Tye		12½					
Hallyard		20	Single	6	2		
Strapping	2	1					
Horſes, 2		6					
Braces, 2	2	48	Single	7	2		
Pendants, 2							
Strapping, 2	2	1					
Lifts ſingle, 2		32					2
Strapping							
Parrel Ropes, 2		2½	Parrel	8	1		
Clewlines, 2		46	Single	6	4		
Strapping		2					
Bowlines, 2		50	Single	6	2		2
Bridles, 4		6					2
Strapping		1					
Earings, 4		1½	of a Tar'Line				
Shifting Backſtays, 1 Pair		16					1
Tackles, 2 No.		7	Single	6	2	2	2
Strapping		1					
Stayſail Stay		26	Single	8	1		
Hallyard	2	32	Single	7	1		
Sheets, 2		32	Single	7	2		
Tacks	1	6					
Downhaller	1	23	Single	5	2		
Strapping	2	2					

22 and 20 Gun Ships. 450 and 400 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	1½	54	Single	6	6		
Sheets, 2 Pair — —	1	32					
Tacks, 2 Pair — —	1¼	41	Single	6	4		
Downhallers, 2 — —	1	30					2
Strapping — — —	1½	7					
MIZEN-MAST.							
Woolding — — — —	2	50					
Girdlines, 2 — — —	2¼	44	Single	10	2		
Strapping — — —	2½	1½					
Seizing — — —							
Laſhings, 2 — — —	1	7					
Burton Pendants, 1 Pair —	3½	5					2
Falls, 2 — — —	2	48	Double	8	2	2	2
			Single	8	2	2	2
Strapping — — —	2½	3					
Shrouds, fine, 5 Pair — —	4½	54	Dead Eyes	7	8		
Seizings Eye, 5 — —		1	Tar' Line				
Throat, 10 —		2	Tar'd Lines				
End, 10 —							
Lanyards, fine, 10 — —	2¼	40					
Ratling — — — —	1	70					
Stay Cabled 4 Strands, fine —	5½	11					2
Seizings, 3 — —		6					
Lanyard, fine — —	2	5					
Collar, fine — — —	4	3					1
Seizing — — —		3					
Laſhing — — —	1	3					
Crowfoot for the Top — —	¾	46	Euphro	14	1		2
Tackle — — —	1	4					
Strapping — — —	1	1					
Jeers, 1 Pair — — —	2½	30	Double Co.	13	1		
			Single Co.	13	1		
Strapping — — —	3½	4½					
Seizing — — —	2	8					
Laſhers at the Maſt Head —	2	7					
Yard —	1	4					
Derrick — — — —	3	26	Double	11	1		
Span — — — —	3	3	Single	11	1		1
Strapping — — —	3	2					
Seizing — — —							
Laſhing — — —	1	8					
Vang Pendants, 2 — —	3	8					
Falls, 2 — —	2	24	Single	8	4	2	2
Strapping — —	2	1					
Bowlines, 2 — — —	2½	10	Single	8	2		2
Strapping — — —	2	2					
Truſs Pendant — — —	3	3½					2
Falls — — —	2	12	Single	7	2	2	2
Strapping — — —	2	2					
Seizing — —							
Brails Peek Legs, 1 Pr. — —	1¾	10					
Falls — — —	1½	16	Single	6	4		2
Middle — — —	1½	19					
Throat — — — —	2	18	Single	7	2		
Middle — — —	1½	15	Single	6	2		
Foot — — — —	1½	13	Single	6	2		2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping — —	2	7					
Lacing Mizen to Yard — —	1	24					
Maſt — worn	2	16					
Earings, 2 — — — —	1	10					
Peek Hallyards — —	1	20	Single	5	1		1
Sheet — — — —	3	20	Double	10	1		1
			Single	10	1		
Strapping — — —	3	2½					
Seizing — — — —							
Tack — — — —	1¾	3					
Slings, 1 Pair — — — —	3½	5					
Stayſail Stay — — — worn	3	11					2
Collar — — —	2	2					1
Seizing — —		3					
Laſhing — —		3					
Lanyard — —	1	6					
Hallyard — — —	2	25	Single	7	3		
Sheets, 2 — — —	2	11	Single	7	2		1
Tack — — — —	2	2					
Downhaller — — —	1½	13	Single	6	2		
Strapping — —	2	4					
Brails, 2 — — —	2	25	Single	7	2		2
Driver Hallyards, 2 Pair —	2¼	27	Single	8	4	1	2
Sheets, 2 — — —	2	12	Single	8	2		
Tacks, 2 — — —	2	20	Single	8	2		
Downhaller — — —	1½	10	Single	6	1		
Strapping — — —	2	5					
Laſhing — — —	¾	8					
CROSS-JACK-YARD.							
Span about the Cap — —	2½	2					
Braces, 2 — — — —	1½	42	Single	6	2		
Pendants, 2 — — —	2	5	Single	6	2		
Preventer, 2 — —							
Strapping — — —	2	2					
Lifts Running, 2 — — —	2	44	Single	7	4		
Strapping — — —	2	2					
Slings, 1 Pair — — —	3½	4	Single	11	1		
Strapping — — —	3	1½					
Seizing — — — —							
Laſhing — — —	¾	4					
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair — —	3	27	Dead Eyes	5	6		
Seizings, 6 — — —		½	Tarr'd Line				
Lanyards, 6 — —	1	24					
Ratling — — —	¾	40					
Standing Backſtays, fine, 1 Pair	3	22	Dead Eyes	5	2		
Seizings, 4 — —							
Lanyards, fine, 2 —	1¼	8					
Stay cabled, 4 Strands, fine —	3½	9½					
Lanyard, fine — —	1½	5					2
Collar — — — —	2½	2					1
Seizing and Laſhing — —							
Flag-ſtaff Stay — — —							
Hallyards, 1 Pair — —	¾	14					
Shifting Backſtays, fine, 1 No. —	3	11					1

22 and 20 Gun Ship. 450 and 400 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backstay Tackle	1½	9	Single	6	2	2	2
Strapping	2	2					
Futtock Shrouds, fine, 3 Pr.	3	8	Plates with Dead Eyes	5	6	6	6
Seizings, 6							
Ratling	1	9					
Top Rope Pendants, fine, 2	4	12	Single I. bo.	12	1		
Falls, 2	2½	26	Double D°	10	2		
Tye	3	9	Single	10	1		
Hallyard	2	24	Single thin	10	2	1	1
Strapping	3	2					
Lashing							
Horses, 2	2½	5½					
Stirrups, 4							
Braces, 2	1½	38	Single	6	2		
Pendants, 2	2	3	Single	6	2		
Strapping	1½	1					
Lifts, 2	1½	38	Single	6	4		
Strapping	1½	2					
Parrel Ropes, 2	1½	4	Parrel	11	1		
Clew-lines, 2	1½	44	Strap bound	6	4		
			Single	6	2		
Strapping	1½	3					
Buntline	1½	21	Single	6	1		1
Strapping	1½	½					
Leechlines, 2							
Strapping							
Bow-lines, 2	1½	30	Single	6	2		2
Bridles, 4	1½	5					2
Strapping	1½	1					
Reef Tackle Pendants,							
Falls, (none)							
Strapping							
Earings, 6	¼	24					
Sheets, 2	3	28	Sin. Should.	10	2		
			Double	10	1		
Strapping	3	3½					
Seizing							
Lashing	¾	4					
Staysail Hallyard	1½	20	Single	6	1		
Sheets, 2	1½	22	Single	6	2		
Tack	1½	2					
Downhaller	1	14	Single	5	1		
Strapping	1½	1½					
MIZEN-TOP-GAL. MAST.							
Shrouds, 2 Pair	1½	26					8
Lanyards, 4		8					
Backstays, 1 Pair	1½	27					4
Lanyards, 2	¾	6					
Stay	2	8					1
Lanyard	1	3					
Tye	2	5					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-GAL. MAST CONT.							
Tye Hallyard	1	20	Single	5	2		
Horses, 2	2	4½					
Braces, 2	1	30					2
Lifts, single, 2	1½	22					2
Parrel Ropes, 2	1	2	Parrel	6	1		
Clew-lines, 2	1	40	Single	4	2		
Bow-lines, 2	1	36					4
Bridles, 4	1	2					
Earings, 2	½	Tarr'd-Line					
Strapping	1	2					
NECESSARY ROPES.							
Viol Cabled							
Strapping							
Seizing							
Lashing							
Winding Tackle Pendant							
Fall							
Strapping							
Seizing							
Catt Falls, 2	3	54	Treble I. bo. Coaked	15	2		
Lanyards, 2	2	10	Single	8	2		4
Stoppers 2 No.	2½	3	2 large ragged Staples				
Guy's Mast-Head, 2	5½	22					
Fore, 2	5½	12					
After, 2	3¾	14					
Fish Tackle Pendant	6	7	Single Coaked	15	1	Fish 1	1
Fall	3	36	Long Tack.	26	2		
Strapping	3½	8					
Seizing	¼	14					
Lanyard	2	12					
Anchor Stock Tacklefall	2	18	Double	8	1	1	1
			Single	8	1	1	1
Bill Pendant	3½	7½				1	2
Strapping	2½	2					
Seizing							
Stoppers Sheet Anchor, 2	5	5½					
Best Bower, 2	5	5½					
Small Bower, 2	5	5½					
Spare, 2	5	5½					
Seizings	¼	16					
Wing cabled, 2 No.	5	13					
Dog, 2 No.	5	13					
Seizing	¾	18					
Stream Anchor, 2	3	3					
Kedge, 2	2½	3					
Deck & Bit, cabled, 10 No.	7½	24					10
Lanyards, 10 No.	2	30					
Seizing	1	52					

22 and 20 Gun Ship. 450 and 400 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Stopper Preventer — —	6	12					
Ditto — — — —	5½	12					
Ditto — — —	5	12					
Ditto — — —	4½	12					
Ditto — — — —	4	6					
Ditto — — — —	3½	8					
Ditto — — —	3	12					
Ditto — — (none.)							
Ditto — (none.)							
Shank painters Sh. Anchor cab. 2	4½	8					
Best Bower, 2 —	4½	5					1
Small Bower, 2 —	4½	5					1
Spare, Cabled, 2 —	4½	8					
Seizing —		10					
Ropes Buoy Sheet Anchor cabled	4½	24					
Best Bower Cabled —	4½	24					
Small Bower Cabled —	4½	24					
Seizing —	¾	16					
Stream Anch. Cabled —	3	30					
Kedge Cabled — —	2½	30					
Davit, 2 — — — worn	2	7					
Bell — — — —	2	2					1
Buckets — — —		54	Coil Lashing				
Swab, 2 — worn	3	17	Single	10	2		
Entering, 6 — —	3	17					
Passing — — —							
Lanyard — —							
Slip — — — —							
Quarters, Poop and Stantion in the Waste, — —	3	90					14
Fore, Main & Mizen Tops		1	Coil Lashing				
Wheel or Tiller White —	3	22	Single	10	2		2
Strapping — —	3	1½					
Seizing — —							
Puddening of Anchors, worn	3	70	Old Canvas.	yd			
	2	25		14			
Seizings,	1	50					
Slings Buoy, 3 Pair — —	3	44					6
Lanyards, 2 — worn	2	9					
Seizings, 6 —		2	Tarr'd Lines				
Gun — — —	5½	6					
Nut — — —	4	3½					
But, 4 Pair — —	5	15					3
Hogshead, 4 Pair — —	4	12					3
Can-Hook, 2 Pair — —	4½	6					
Straps for Wood Buoys — worn	3½	5					
Swabs — worn	3½	15					
Cable Bends, 6 — —	2	51					
Rudder Pendants, cabled, 2 —	5	8					4
Lanyards, 2 —							
Falls, 2 — — —			Long Tackle				
Strapping — —			Single				
Seizing — — —							
Stern Ladders, 4 Strands, worn	4	17					
Middle Rope, 2 worn	1½	13					
Lashing — worn	1	8					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Futtock Staves, 10 —	4½	6					
	3	2					
Swifters for Capston-Bars	2	50					
Lashing-Cables between Decks							
Sheep-Pens, Steep-Tubs, Tubs in the Tops, & Booms		2	Coils Lashing				
Nettings for the Quart. Waste, Tops, and Barricadoes —	¼	450					
Hallyard for Top Lanthorn							
Ensigns —	1	28					
Jacks —	¾	10					
For Colours Head Line —		1½	White-lines				
For Colours Rope Bands		3 lb	Marlines				
For Colours Pendant Slings	¾	20					
Awnings Ridge and Side Rope	3	95	Single	10	3		
Stops — —	1	24					
				24	1		
Crowfeet — —	1	100	Euphro	14	1		
				12	1		
Hallyard —	1½	32					
Ridge Tackle Fall —	2	10	Double	7	1		
			Single	7	1		
For different Uses of the Ship			Snatch Iron	14	4	4	
			Bo. Hooks	11	4	4	4
			Coaked	10	4	4	4
Strapping —	3	7					
Seizing —							
LONGBOAT.							
Burton Pendants, — —	3	3	Single	8	2		2
Runner — —	2½	10					
Falls, 2 — —	2	14	Double	8	2	2	2
			Single	8	2	2	2
Strapping —	2½	2					
Shrouds, 2 Pair —	2½	13					4
Lanyards, 4 —	1	6					
Stay — — —	3½	5					1
Lanyard —	1	2					
Tye — — —							
Main Hallyard —	1	13	Single	5	1		
Outer Hallyard —	1	16	Doub. I. bo.	5	1		
			Single	5	1		1
Sheet — — —	1	9	Single	5	2		1
Wood Hoops, 8							
Downhaller —	1	10					
Strapping —	1	5					
Topping Lift —	1	12					
Fore Hallyard —	1	10					
Sheet — —	1	4					2
Tack — —	¾	1					
Bowline —	1	1					
Jib Hallyards —	1	10					
Sheet — —	1	8					
Outhaller —	1	8	Iron Trave		1		
Innhaller —	¾	5					
Boat-Rope, cabled —	4½	30					
Lanyard —	2	2					

22 and 20 Gun Ship. 450 and 400 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
LONGBOAT CONTINUED.							
Gueſt-Rope, cabled — —	3	28					
Grapnel-Rope, cabled — —	3½	40					
Painter — — — —	3	6					
Sternfaſt — — worn	2	10					
Fenders, cabled, 6 — worn	3½	9					
Lanyards, 6 — —	1	9					
Rudder Lanyards, 2 — —	1	1½					
PINNACE.							
Hallyards Main and Fore, 2 —	1¾	10					
Sheets, 4 — — —	1	10					
Grapnel-Rope, cabled — —	3	35					
Painter — — —	3	5					2
Sternfaſt — — worn	2	5					
PINNACE CONTINUED.							
Slings, 2 Pair — —	5	5				4	6
Seizings, 2 — —	¼	10					
Rudder Lanyards, 2 — —	1	1					
YAWL or CUTTER.							
Hallyards *(if Cutters)* 2 Pair —	1	6	Iron Trave				
Sheets, 4 — — —	2	4					
	1	4					
Grapnel-Rope, cabled —	3	40					
Painter — —	3	5					2
Slings, 2 Pair —	5	5				4	6
Seizings, 2 —	1	10					
Rudder Lanyards, 2 — —	1	1					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each. Thus, in Page 111, Article 2, by Gammoning, 1 —| 5 |48 | is meant, One Gammoning are neceſſary, made of Rope 5 Inches in Circumference, containing in the Whole 48 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
SLOOPS OF 16 and 14 GUNS,
Being respectively of 300 and 280 Tons Burthen.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding	2	50					
Gammonings, 1	4½	40					
Shrouds fine, 1 Pair	4½	10	Hearts	6	2	2	2
Collars fine, 2	3½	3½	Hearts	6	2		
Seizings, 2	1¼	7					
Lashings, 2	1	5					
Lanyards fine, 2	2	8					
Bobstays cabled fine 2 Pair	5	13	Hearts	6	2		
Collars fine 2	5	3½	Hearts	6	2		
Seizings, 2	¾	11					
Lashings, 2	1	6					
Lanyards fine, 2	2½	10					
Horses, 2	3	9				6	
Straps, 2	2	2				4	
Lanyards, 2	1	4					
SPRITSAIL.							
Horses, 2	2½	7					
Stirrups, 4	2	2				4	
Braces, 2	2½	34	Double	9	4		
Pendants, 2							
Strapping	3	4					
Lifts, 2	2	28	Single	7	4		
Beckets, 2	2	2					
Strapping	2	2					
Seizing							
Standing, 2	2½	5				4	
Straps, 2	2	2					
Lanyards, 2	¾	3					
Hallyard	2	16	Single	7	2		
Strapping	2½	1½					
Seizing and Lashing							
Slings, 1 Pair	3½	3					
Seizing and Racking	¼	5					
Clew-Lines, 2	1½	20	Strap bound	6	2		
Strapping	1¼	1½					
Buntlines, 2	1	17					
Strapping	1½	2					
Earings, 4	1	11					
Sheets cabled fingle, 2	3	27					

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
JIBB.							
Horses, 1	3	11					
Seizings, 2	¼	of a Tar' Line					
Guy Pendants, 1 Pair	2½	20	Single	10	2		
Falls, 2	1½	20	Single	8	4		
Strapping	2½	1					
Lashers, 4	¾	8					
Out-Haller	2	13					
Tackle-Fall							
Strapping							
Stay	3	17	Single	9	1		
Strapping	3	1					
Tacklefall	1½	11	Single	6	2		
Strapping	1½	1					
Hallyard	2½	26	Single	9	1		
Strapping	2½	1½					
Downhaller	1¾	22	Single	6	1		
Sheets fingle, 2	2½	24	Single	9	2		
Pendants							
SPRITSAIL TOPSAIL.							
Horses, 2	2	5½					
Braces, 2	1½	37					
Strapping							
Lifts fingle, 2	1½	26					2
Strapping							
Hallyard	1¾	18	Single	6	2		
Strapping	1½	1½					
Lashing							
Parrel-Ropes, 2	1½	3	Parrel	8	1		
Clewlines, 2	1½	30	Single	6	2		
Strapping	1½	1½					
Lacing and Earings		1	Tar' Line				
FORE-MAST.							
Woolding	2½	120					
Girdlines, 2	2½	42	Single	9	2		
Strapping	2½	1½					
Seizing							
Lashings, 2	¼	12					

16 and 14 Gun Sloops. 300 and 280 Tons.

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Iron. Thimbles
FORE-MAST CONTINUED.							
Pendants of Tackles cab. fine, 1 Pr.	7	6	Sin. Coaked	15	2		4
Strapping — —	4½	2					
Seizing — —	¾	7					
Runners of Tackles, 2 —	4	20	Thin Coak	13	2		
Strapping — —	3½	2					
Falls of Tackles, 2 — —	2½	60	Single	13	2	2	2
			Thin Coak.	9	2	2	2
Strapping —	3½	3½					
Seizing — —	¾	10					
Shrouds cabled fine, 6 Pair —	7	79	Dead Eyes	10	12		
5 Pair —	7	67	Dead Eyes	10	10		
Seizings Eye, 5 — —	1	25					
Throat, 12 — —	1	58					
Lanyards fine, 12 — —	3½	60					
Ratling — — —	1½	120					
Stay cabled fine 4 Strands —	9½	9	Heart	13	1		
Seizings, 3 —	1	9					
Lanyard fine — —	3½	9					
Collar cab. 4 Str. fine doub.	5	4½	Heart	13	1		
Seizings, 2 —	1	6					
Lashing — —	1½	5					
Preventer Stay cabled 4 Str. fine	6	9	Heart	10	1		
Lanyard fine —	2½	6					
Coll. cab. 4 Str. fine double —	4	4½	Heart	10	1		
Lashing —	1	5					
Seizings, 2 —	1	8					
Catharpin Legs 4 — —	3½	8					
Seizings, 8 —	¾	30					
Crowfoot for the Top — —	¾	55	Euphro	16	1		2
Tackle — —	1	4					
Strapping —	1	1					
Jeers { Tye — — —	7	10	Sing. d. sc	20	3		
Falls, 2 Pair —	2½	54	Double co.	12	4		
	5	10½	Single	9	2		
Strapping — —	4	3½					
	2½	1					
Seizing — — —	1	19					
Lashing at the Mast Head —	3	36					
Yard — —	2	6					
Stoppers — —							2
Horses, 2 — — —	3½	9					6
Stirrups, 4 — — —	2½	6					
Seizings, 2 — —							
Lanyard — — —	1	3					
Yard Tackle Pendants, 2 —	4½	6	Do. thin Co.	11	2		
Falls, 2 — —	2½	56	Dou. thin Co.	13	2	2	2
			Single	9	2		
Strapping — —	3	5					
Seizing — —							
Inner Tric. Lines, 2	1½	26	Single	6	2		
Outer Tric. Lines, 2	1½	26	Single	6	4		
Strapping — —	1½	5					
Braces, 2 — — —	2½	56	Single Coak.	9	4		
Pendants, 2 — — —	3½	7	Single Coak.	9	2		
Preventer, 2 — —	2½	8					
Strapping — — —	2½	3					
Seizing — — —							

Names of the standing and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks.	Iron. Thimbles
FORE-MAST CONTINUED.							
Lashing — — —	¼	10					
Preventers (in War only) 2	2	50	Single	8	4		
Braces Preventer Strapping —	2	2					
Seizing — —							
Lifts, 2 — — — —	3	60	Single	9	6		
Span for the Cap — —	4	4½					
Short Span — — —	3	1½					
Strapping — — —	3	3					
Seizing — — —							
Jigger Tackle, No. 2 —							
Strapping —							
Truss Pendants, 2 — — —	4½	8					4
Falls, 2 — — —	2	32	Double	8	4	4	4
Strapping — —	2½	3½					
Eye Seizings, 2 —	½	10					
Nave Line — —							
Puddening the Yard — worn	5	5					
Clew-garnets, 2 — — —	2½	42	Sin. Strapbo.	9	4		
				9	2		
Straps ab. the Yard	2½	5½					
Strapping — —	2½	1					
Seizing — —							
Lashing — —							
Buntline Legs, 4 — — —	2	28	Double	8	4		
Falls, 2 — — —	2	28	Single	8	8		
Strapping — — —	2½	8					
Leechline Legs, 2 — — —	2	29	Double	7	4		
Falls, 2 — — — —	2	29	Single	7	4		
Strapping — — —	2½	5					
Slablines, 2 — — —	1½	19	Single	6	2		
Strapping — — —	1½	1					
Bowlines, 2 — — — —	3	34	Single	11	2		2
Bridles, 2 — — —	3	4					
Strapping — — —	3	2					
Seizing — — —							
Lashing — — —	1	7					
Earings, 6 — — — —	1½	26					
Sheets Cabled, 2 — — —	4	48	Sin. Coaked	14	2		2
Strapping — — —	4	3					
Seizing — — —	¾	10					
Stoppers — — —	3	3					
Tacks Taper and Cabled, 2 —	5	26	Shouldered	14	2		
Strapping — — —	4	3½					
Seizing — — —	¾	7					
Stoppers, 2 — — —	3½	3½					
Lanyards 2 —							
Gammoning the Bumkin, worn —	2½	10				2	6
Lanyards, 2 — — —	1	6					
Lany. for Pudden & Dolphin —	¾	6					4
Slings — — —							
Strap — — —							
Seizings — — —							
Lanyard — — —							
Stayfail Hallyard — —	2	22	Single	8	2		
Sheets, 2 — — —	2½	18	Single	8	2		
Tack — — —	1½	1½					
Downhaller — —	1½	15	Single	6	1		

16 and 14 Gun Sloops. 300 and 280 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Strapping — —	2	3					
Studd. Sail Hallyard, Inner, 2 Pr.	2	30	Single	9	6		
Outer, 2 Pr. —	2½	52	Single	9	4		
Sheets, 2 Pr. — — —	2	10					
Tacks, 2 Pr. — — —	2¼	40	Single	9	2		
Strapping — — —	2½	12					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair —	3	4					2
Falls, 2 — — —	1¾	32	Double	6	2	2	2
			Single	6	2	2	2
Strapping — — —	2	2					
Shrouds fine 4 Pr. — —	4½	41	Dead Eyes	7	8		
Seizings Eye, 4 — —		1	of a Tar'Line				3
Throat, 8 —		2	Tarr'd Line				6
End, 8 — —							6
Lanyards fine, 8 — —	2¼	40					6
Ratling — — — —	1	60					
Standing Backſtays fine 3 Pr. —	4½	44	Dead Eyes	7	2		
Seizings Eye, 3 —		½	of a Tar'Line				
Throat, 6		1	Tarr'd Line				
End, 6							
Lanyards fine, 6	2¼	8					
Breaſt Backſtay Runners, 2 —	3	7	Single	9	2		
Falls, 2 — —	2	12	Double	7	2		
			Single	7	2		
Strapping — —	2½	2					
Stay Cabled 4 Strands fine —	5	14					
Collar fine — —	4	3	Single	13	1		
Tackle — — —	2¼	15	Long Tackle	15	1		
			Single	13	1		
Strapping — —	3	2					
Seizing — — —	¾	9					
Preventer Stay cab. 4 Str. fine —	4	14					
Collar, fine — —	3	2½	Single	10	1		
Tackle — —	2	13	Long Tackle	14	1		
			Single	7	1		
Strapping — — —	3	2					
Seizing — — —	¾	6					
Lashing the Col.	1	5					
Shifting Backſtays, fine, 1 Pair —	4½	11					1
Tackles 4 No. — —	2	10	Double	8	1	1	1
			Single	8	1	1	1
Strapping — — —	3	1½					
Futtock Shrouds, fine, 4 Pair —	4½	15	Plates with Dead Eyes	7	8	8	8
Seizing Upper, 8	¼	20					
Lower, 8							
Ratling — —	1	16					
Top Rope Pendants, fine —	6	13	Single				
			Iron Bound	16	1	1	
			Coaked				
Falls, 2 — — —	2	34	D. Iron Bo.	14	2		
Tye — — — —	4½	12	Flat S. Co.	14	1		
Strapping — — —	4	1					
Seizing — — — —	¾	3					
Lashers at the Maſt Head, 2	1½	8					
Yard — — —	1	3					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Hallyards — — —	2¾	36	Do. thin Co.	14	1		
			Sin. Ditto	14	1	1	1
Strapping — —	3¼	3					
Seizing — — —	¾	5					
Horſes, 2 — — —	3	7					
Stirrups, 4 — —	2	4					4
Braces, 2 — — —	2	56	Single	8	4		
Pendants, 2 — —	3	6	Single	8	2		
Preventer, 2 — —	2	7					
Strapping — —	2	4					
Lifts, 2 — — — — —	2½	40	Double	8	2		
			Single	8	4		
Beckets, 2 — —	2¼	2					
Strapping — —	2¾	5					
Seizing — —							
Parrel Ropes, 2 — —	2	8	Parrel	14	1		
Racking and Seizing		½	of a Tar'Line				
Clewlines, 2 — — — —	2	52	Sin. Str. bo.	8	4		
			Single	8	2		
Strapping — —	2¾	5½					
Buntlines, 2 — — —	2	40	Single	7	4		
Strapping — —	2	2½					
Leechlines, 2 — — —	1¾	16	Single	6	2		
Strapping — —	1½	1					
Bowlines, 2 — —	2	38	Single	8	2		2
Bridles, 4 — — —	2	6					4
Strapping — —	2	1½					
Lashing — —	¾	6					
Reeftackle Pendants, 2 —	2¼	26	Single	7	4		2
Falls, 2 — — —	1¾	30					
Strapping — —	2	1½					
Earings, 8 — — —	1	36					
Sheets, 2 — — — —	4	32	Sin. Shoul.	14	2		
			¼ do. th & thin	14	2		
Straps for Sheet Blocks, 2	4½	3					
Quarter Blocks, 2 —	3½	5					
Laſhers for Quarter Blocks, 2	1	5					
Seizings — — —	¾	14					
Span — — — worn	3	4½					
Stoppers, 2 — —	3	3					
Slings, 1 Pair — —	3	5					
Stayſail Stay — —	2¾	15	Single	9	1		
Tackle — —	2	8	Single	8	2		
Hallyard — —	2	25	Single	8	1		
Strapping — —	2	1½					
Sheets, 2 — —	2¼	20	Single	9	2		
Strapping — —	2¾	1					
Outhaller — —	1¾	10	Single	6	1		
Downhaller — —	1	17	Single	5	1		
Strapping — —	1	1					
Studdingſail Hallyards, 2 Pair —	2	60	Single	8	6		
Sheets, 2 Pair — —	1½	24	Single	8	2		
Tacks, 2 Pair —	2	46	Single	8	2		
Downhallers, 2 —	1	34	Single				6
Boom Tackles, 2 —							
Tails and Straps, 2 —	2	12					

16 and 14 Gun Sloop. 300 and 280 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — — —	2½	44					12
Lanyards, 6 — — —	1	12					
Standing Backſtays, 2 Pair —	2½	53					4
Lanyards, 4 — — —	1	12					
Stay — — —	3	18					1
Strapping — — —	2½	½					
Tackle — — —							
Strapping — — —							
Flagſtaff Stay — — —							
Hallyards, 1 Pair — —	¾	20					
Tye — — — — —	2½	11					
Hallyard — —	1½	16	Single	6	2		
Strapping — — —	2	1					
Horſes, 2 — — — —	2	4½					
Braces, 2 — — — —	1½	54	Single	6	4		2
Pendants, 2 — — —							
Strapping — — —	1½	1½					
Lifts ſingle, 2 — — —	2	27					2
Strapping — — —							
Parrel Ropes, 2 — — —	1½	2½	Parrel	6	1		
Clewlines, 2 — — —	1	35	Single	5	4		
Strapping — — —	1	1½					
Bowlines, 2 — — — —	1	47					6
Bridles, 2 — — —	1	3					
Strapping — — —							
Earings, 2 No. — — — —		1	Tarr'd Line				
Shifting Backſtays, 1 Pair —	2½	15					1
Tackles, 2 No. —	1½	6	Single	6	2	2	2
Strapping — — —	1½	1					
Studdingſail Hallyards, 2 Pair —	1½	40	Single	6	6		
Sheets, 1 Pair — —	1	12					
Tacks, 2 Pair — —	1½	34	Single	6	4		
Downhallers, 2 No. — —	1	13					
Royal Hallyards —							
Strapping — — —	1½	7					
MAIN-MAST.							
Woolding — — —	2½	130					
Girdlines, 2 — — —	2½	44	Single	9	2		
Strapping — — —	2½	1½					
Seizing — — —							
Laſhings, 2 — — —	¾	12					
Pendants of Tack. cab. fine, 1 Pr.	7	7	Sin. Coak.	15	2		4
Strapping —	4½	2					
Seizing —	¼	7					
Runners of Tackles, 2 — —	4	22	Do. thin Co.	13	2		
Strapping — —	3½	2					
Falls of Tackles, 2 — — —	2½	64	Sin. t. Co.	13	2	2	2
				9	2	2	2
Strapping — —	3½	3½					
Seizing —	¼	10					
Shrouds cabled, fine, 6 Pair —	7	87	Dead Eyes	10	12		
Ditto, 5 Pair — —	7	74	Dead Eyes	10	10		
Seizings Eye, 5 — —	1	25					
Throat, 12 — —	1	58					
End 12 — — —	¾	58					
Lanyards, fine, 12 — —	3½	60					
Ratling — — —	1½	130					
Stay cabled 4 Strands, fine —	10	14	Heart	15	1		
Seizing — — —	1½	13					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Stay Lanyard, fine — —	3½	10					
Collar cabled 4 Strands, fine	8	6	Heart	15	1		
Worming — —	¼	28					
Seizing — —	1	9					
Laſhing — — worn	2	12					
Preventer Stay cab. 4 Strands fine	7	12	Heart	11	1		
Lanyard, fine —	3	7					
Col. cab. 4 ſtr. fine. do.	4½	3½	Heart	11	1		
Laſhing — —	2	5					
Seizings, 3 — —	1	11					
Catharpin Legs, 4 — — —	3½	8					
Seizings, 8 — —	¼	30					
Stay Tackle Pendant — —	5	3½	Do. thin Co.	12	1		
Falls — — —	3	30	S. thin Co.	13	1	1	2
			———	11	1	1	1
Strapping — —	3½	3					
Seizing — —	¼	10					
Laſhing — —	1½	7					
Fore-Stay Tackle Fall — —	3	30	Do. thin Co.	12	1		
			———	13	1	1	2
			S. thin Co.	11	1	1	1
Strapping —	3½	3					
Seizing —	¼	10					
Crowfoot for the Top — —	¾	55	Euphro	16	1		2
Tackle — — —	1	4					
Strapping — —	1	1					
Jeers { Tye — — —	7	12	S. d. f. c.	20	3		
Falls, 2 — —	2½	60	Double	12	4		
			Single	9	2		
	5	11½					
Strapping — —	4	3½					
	2½	1					
Seizing — — — —	1	20					
Laſhers to the Maſt Head, 2	3	28					
Yard — —	2	6					
Stoppers, 2 — — —							
Horſes, 2 — — —	3½	10					
Stirrups, 4 — — —	2½	6					2
Seizings, 2 — — —							6
Lanyard 1 — — —	1	3					
Yard Tackle Pendants, 2 —	4½	7	Do. thin Co.	11	2		
Falls, 2 — —	2½	60	S. thin Co.	13	2	2	2
Straps — —			Single	9	2		
Strapping — —	3	5					
Seizing — —							
Inner Tricing-Lines	1½	28	Single	6	2		
Outer Tricing-Lines	1½	28	Single	6	4		
Strapping — —	1½	5					
Braces, 2 — — —	2½	54	Sin. Coak.	9	2		
Pendants, 2 — —	3½	7	Sin. Coak.	9	2		
Preventer, 2 — —	2½	8					
Strapping — —	2½	2½					
Seizing — — —							
Preventers (*in War only*) 2	2	52	Single	8	4		
Strapping — —	2	2					
Seizing — — —							
Lifts, 2 — — — —	3	66	Single	9	6		
Span for the Cap — —	4	5					
Short Span — —	3	2					

16 and 14 Gun Sloop. 300 and 280 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Lifts Strapping — —	3	3					
Seizing — —							
Jigger Tackle — —							
Strapping —							
Truſs Pendants, 2 —	4½	10					4
Falls, 2 — —	2	40	Double	8	4	4	4
Strapping —	2½	3½					
Eye Seizings, 2	¼	10					
Puddening the Yard — worn	5	5					
Clewgarnets, 2 — — —	2½	50	Strapbound	9	4		
			Single	9	2		
Strap about the Yard	2½	5½					
Strapping —	2½	1					
Seizing — —							
Laſhing — —							
Buntline Legs, 4 —	2	31	Double	7	2		
Falls, 2 — —	2	34	Single	7	8		
Strapping —	2½	7					
Leechline Legs, 2 —	2	34	Double	7	4		
Falls, 2 — —	2	34	Single	7	4		
Strapping —	2½	5					
Slablines, 2 — —	1½	27					
Strapping —	1½	1					
Bowlines, 2 — —	3	35	Double	12	1		4
Bridles, 4 —	3	9					2
Strapping —	3	3					
Seizing — —	¼	4					
Laſhing — —	1	3					
Tackle — —	2	12	Double	8	1	1	1
			Single	8	1	1	1
Strapping —	2	2					
Earings, 6 — —	1½	27					
Sheets, cabled, 2 —	4½	50	Sin. Coak.	1	2		2
Strapping —	4½	3					
Seizing — —	¼	10					
Laſhers, 2 — —							
Stoppers, 2 — —	3	3					
Tacks Taper and Cabled, 2 —	5½	28					
Stoppers, 2 — —	4	3½					
Lanyards, 2 —							
Lany. for the Pudden & Dolphin —	¼	7					4
Slings, 1 Pair — —							
Straps — — —							
Seizing — —							
Lanyard — —							
Quarter Tackle Pendants, 2 —	4½	7	Do. thin Co.	11	2		
Falls, 2 — —	2½	56	S. thin Co.	13	2	2	2
			———	11	2	2	2
Strapping — —	3½	5					
Seizing — —							
Luff Tackles, 4 No. — —	2½	60	Double	10	3	3	3
			Single	10	3	3	3
Strapping — —	3	6					
Seizing — —							
Stayſail Stay — — — worn	3	8					
Collar — — —	3	2					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Stayſail Collar Seizings — —	¼	6					
Lanyard — —	1	2					
Hallyard — — —	2	23	Single	8	3	1	1
Sheets, 2 — — —	2	8	Single	8	2	1	1
Tacks, 2 — — —	2	2					
Downhaller — — —	1½	13	Single	6	1		
Strapping — — —	2	3					
	1½	½					
Studd. ſail Hallyards, Inn. 2 Pr.	2	34	Single	9	6		
Outer, 2 Pr. —	2½	58	Single	9	4		
Sheets, 2 Pair — —	2	14					
Tacks, 2 Pair — —	2½	32	Single	9	2		
Strapping — — —	2½	12					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair — —	3	5					2
Falls, 2 — — —	1½	36	Double	6	2	2	2
			Single	6	2	2	2
Strapping — — —	2	2					
Shrouds, fine, 4 Pair — —	4½	45	Dead Eyes	17	8		
Seizings Eye, 4 — —		1	of a Tar'Line				
Throat, 8 —		2	Tar Lines				
End, 8 — —							
Lanyards, fine, 8 — —	2½	40					
Ratling — — —	1	66					
Standing Backſtays, fine, 3 Pr. —	4½	48	Dead Eyes	7	2		
Seizings Eye, 3 —		½	of a Tar'Line				
Throat, 6		1	of a Tar'Line				
End, 6							
Lanyards, fine, 6	2½	8					
Breaſt Backſtay Runner —	3	7	Single	9	2		
Fall — —	2	12	Double	7	2		
			Single	7	2		
Strapping — —	2½	2					
Stay Cabled 4 Strands, fine —	5½	14					
Collar, fine — — —	4	3	Single	14	1		
Tackle — — —	2½	15	Long Tackle	15	1		
			Single	7	1		
Strapping — — —	3	2					
Seizings — — —	¼	9					2
Laſhing — — —	1	6					
Preventer Stay, Cabled 4 ſtr. fine	4	13½					
Collar, fine —	3	3	Single	11	1		
Tackle — —	1½	5					
Strapping —							
Seizing — —	½	3					
Laſhing the Col. —	½	3					
Shifting Backſtays, fine, 1 Pair —	4½	12					1
Tackles, 4 No. —	2	10	Double	8	1	1	1
			Single	8	1	1	1
Strapping — —	3	1½					
Futtock Shrouds, fine, 4 Pair —	4½	16	Pla with D. E	7	8	8	8
Seizings Upper, 8	¾	20					
Lower, 8							
Ratling — —	1	18					
Top Rope Pendants, fine	16	14	Sin. I. bound	16	1		1

16 and 14 Gun Sloops. 300 and 280 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Top Rope Falls, 2 — —	3	37	D. I. b. Co.	14	2		
Tye — — —	4½	13	Single	14	1		
Strapping — — —	4	1					
Seizing — — —	¾	3					
Laſhers at the Maſt Head, 2	1½	8					
Yard — —	1	3					
Hallyards, 2 — — —	2½	42	Do. thin Co.	14	1		
			S. thin Co.	14	1	1	1
Strapping — — —	3½	3					
Seizing — — —	¾	5					
Horſes, 2 — — —	3	8					
Stirrups, 4 — — —	2	4					4
Braces, 2 — — — —	2	50	Single		2		
Pendants, 2 — — —	3	6	Single	8	2		
Preventers, 2 — —	2	7					
Span ab. the Mizen Maſt —	3½	3½					
Strapping — — —	2	2½					
Lifts, 2 — — — —	2½	44	Double	8	2		
			Single	8	4		
Beckets, 2 — — —	2½	2					
Strapping — — —	2½	5					
Seizing — — —							
Parrel Ropes, 2 — — —	2	8	Parrel	14	1		
Racking and Seizing —		½	of a Tar'Line				
Clew-lines, 2 — — —	2	58	Sin. Str. Bo.	8	4		
			Single	8	2		
Strapping — — —	2	5½					
Bunt-lines, 2 — — — —	2	44	Single	7	4		
Strapping — — —	2	2½					
Leech-lines, 2 — — — —	1½	17	Single	6	2		
Strapping — — —	1½	1					
Bowlines, 2 — — — —	2½	42	Single	9	2		2
Bridles, 4 — — —	2½	10					4
Strapping — — —	2½	1½					
Seizing — — —							
Frapping and Laſhing —	1	9					
Reeftackle Pendants, 2 —	2½	30	Single	7	4	2	2
Falls, 2 — — — —	1½	38					
Strapping — — —	2	1½					
Earings, 8 — — — —	1	36					
Sheets, 2 — — — —	4½	34	Shoul. Co.	14	2		
			¼ Double	14	2		
Straps for Sheet Blocks, 2 —	5	3½	Thick & thin				
Quarter Blocks, 2 —	4	5					
Laſhers for Quart. Blocks, 2	1	5					
Seizings, 2 — — —	¾	14					
Span — — — worn	3	4½					
Stoppers, 2 — — —	3	3					
Slings, 1 Pair — —	3½	6					
Stayſail Hallyard —	2½	26	Single	8	1		
Strapping —	2½	1					
Sheets, 2 — — —	2½	24	Single	8	2		
Strapping —	2½	1½					
Pendant —							
Tack — — — —	2	2					
Downhaller — —	1½	15	Single	6	2		
Strapping — —	1½	1					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Stayſail Brails — — —							
Middle Stayſail Stay — —	2½	14½	Single	9	1		
Tackle —	1½	10	Single	6	2		
Hallyard —	2	24	Single	8	1		
Sheets, 2 — —	2	29	Single	8	2		
Tack — — —	2	3					
Downhaller — —	1½	17	Single	6	1		
Strapping —	2	4					
Tricing-line							
Studdingſail Hallyards —	2	64	Single	8	6		
Sheets, 2 Pair — —	1½	28	Single	8	2		
Tacks, 2 Pair — —	2	48	Single	8	2		
Downhallers, No. 2 — —	1	36					6
Boom Tackles, 2 No. —							
Laſh. for Booms — worn	2	18					
Tailing and Strapping —	2	13					
MAIN-TOP-GAL. MAST.							
Shrouds, 3 Pair — — —	2½	49					12
Lanyards, 6 — — —	1	12					
Standing Backſtays, 2 Pair —	2½	58					4
Lanyards, 4 — —	1	12					
Stay — — —	3	14					1
Strapping — —							
Flagſtaff Stay — —							
Hallyards, 1 Pair — —	¾	22					
Tye — — — —	2½	11½					
Hallyard — — —	1½	19	Single	6	2		
Strapping — — —	2	1					
Horſes, 2 — — —	2	5					
Braces, 2 — — — —	1½	42	Single	6	2		
Pendants, 2 — —							
Strapping, 2 — — —	1½	1					
Lifts ſingle, 2 — — —	2	28					2
Strapping — —							
Parrel Ropes, 2 — — —	1½	2½	Parrel	7	1		
Clewlines, 2 — — —	1	40	Single	5	4		
Strapping — — —	1	1½					
Bowlines, 2 — — — —	1	44					4
Bridles, 4 — — —	1	5					2
Strapping — — —							
Earings, 4 — — —		1½	of a Tar'Line				
Shifting Backſtays, 1 Pair —	2½	14					1
Tackles, 2 No. —	1	6	Single	5	2	2	2
Strapping — —	1	1					
Stayſail Stay — — —	2	24	Single	7	1		
Hallyard — — —	1½	28	Single	6	1		
Sheets, — — — —	1½	28	Single	6	2		
Tacks — — — —	1	5					
Downhaller — — — —	1	20	Single	5	2		
Strapping — —	1½	2					

16 and 14 Gun Sloops. 300 and 280 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Studdingſail Hallyards, 2 Pair	1½	48	Single	6	6		
Sheets, 2 Pair	1	30					
Tacks, 2 Pair	1½	38	Single	6	4		
Downhallers	1	30					
Strapping	1½	7					
MIZEN-MAST.							
Woolding							
Girdlines, 2	2	36	Single	9	2		
Strapping	2	1½					
Seizing							
Laſhings, 2	¾	6					
Burton Pendants, 1 Pair	3½	4				2	
Falls, 2	2	44	Double	8	2	2	2
			Single	8	2	2	2
Strapping	2½	3					
Shrouds, fine, 4 Pair	4½	48	Dead Eyes	7	8		
Seizings Eye, 4		1	Tar' Line				
Throat, 8 / End, 8		2	Tar'd Lines				
Lanyards, fine, 8	2½	40					
Ratling	1	65					
Stay Cabled 4 Strands, fine	5½	10				2	
Seizings, 3	¾	6					
Lanyard, fine	2½	5					
Collar, fine	4	2					
Seizing	¾	3					
Laſhing	¾	3					
Crowfoot for the Top	¾	40	Euphro	12	1	2	
Tackle	1	4					
Strapping	1	1					
Jeers	3	24	Double Co.	11	1		
			Single Co.	11	1		
Strapping	3	4					
Seizing	¼	6					
Laſhers at the Maſt Head	2	6					
Yard	1	3					
Derrick	2½	24	Double	10	1		
			Single	9	1		
Span							
Strapping	3	1½					
Seizing							
Laſhing	1	8					
Vang Pendants, 2	3	7					
Falls, 2	1½	23	Single	6	4	2	2
Strapping	1½	1					
Bowlines, 2							
Strapping							
Truſs Pendant							
Falls							
Strapping							
Seizing							
Brails Peek Legs	1½	11					
Falls	1½	12	Single	6	4	2	
Middle	1½	16					
Throat	2	17	Single	7	2		
Middle	1½	23	Single	6	2		
Foot	1½	10	Single	6	2	2	

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-MAST CONTINUED.							
Brails Strapping	2	6					
Lacing Mizen to Yard	¾	22					
Maſt worn	2	15					
Earings	¾	10					
Peek Hallyards, 1 Pair	1	16	Single	5	1		1
Sheet	2½	16	Single	9	2		1
Strapping	2½	2					
Seizing							
Tack	1½	2					
Slings	3	4½					
Stayſail Stay worn	3	10					2
Collar	2½	2					1
Seizing							
Laſhing							
Lanyard	1	4					
Hallyard	2	22	Single	7	3		
Sheets, 2	2	10	Single	7	1	1	2
Tack	2	2					
Downhaller	1	12	Single	5	1		
Strapping	1½	3					
Brails	2	16	Single	7	2		2
Driver Hallyards	2½	18	Single	8	2		
Sheets, 2	2	10	Single	8	2		
Tacks, 2	2	18	Single	8	2		1
Downhaller	1	10					
Strapping	2	2					
Laſhing							
CROSS-JACK-YARD.							
Span about the Cap	2	1½					
Braces, 2	1½	38	Single	6	2		
Pendants, 2	2	4	Single	6	2		
Preventer, 2							
Strapping	2	2					
Lifts Running, 2	1½	37	Single	6	4		
Strapping	1½	2					
Slings, 1 Pair	3	4					1
Strapping	2½	1					
Seizing							
Laſhing							
MIZEN-TOP-MAST.							
Shrouds, fine, 3 Pair	2½	24	Dead Eyes	5	6		
Seizings			Tarr'd Line				
Lanyards fine, 6	1½	18					
Ratling	¼	36					
Standing Backſtays, fine, 1 Pair	2½	19	Dead Eyes	5	2		
Seizings							
Lanyards, fine, 2	1½	6					
Stay cabled, 4 Strands, fine	3	7½					
Lanyard, fine	1½	4					2
Collar	2	1½					1
Seizing and Laſhing							
Flag-ſtaff Stay							
Hallyards, 1 Pair	¾	12					
Shifting Backſtays, fine, 1 No.	2½	9					1

16 and 14 Gun Sloop. 300 and 280 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MIZEN-TOP-MAST CONT.							
Shifting Backſtay Tackle —	1½	8	Single	6	2	2	2
Strapping —	2	2					
Futtock Shrouds, fine, 3 Pr. —	2½	8	Plates with Dead Eyes	5	6	6	6
Seizings, 6 —							
Ratling —	¼	8					
Top Rope Pendants, fine	4	12	Single I. bo.	12	1		
Falls — —	2½	24	Double D°	10	2		
Tye — — —	3	7	Single	10	1		
Hallyard — —	2	18	Single thin	8	2	1	1
Strapping — —	2½	1					
Laſhing — —							
Horſes, 2 — — —	2	4½					
Stirrups, 4 — —							
Braces, 2 — —	1½	26	Single	5	2		
Pendants, 2 — —							
Strapping — —	1½	1					
Lifts, 2 — — — —	2	26					2
Strapping — —							
Parrel Ropes, 2 — —	1½	3	Parrel	8	1		
			Strap bound	5	4		
Clew-lines, 2 — — —	1½	40	Single	5	2		
Strapping —	1½	2½					
Buntlines, 2 — —	1½	20	Single	6	1		1
Strapping —	1½	½					
Leechlines, 2 — —							
Strapping —							
Bow-lines, 2 — — —	1½	28	Single	5	2		2
Bridles, 4 — —	1½	4					2
Strapping — —	1½	1					
Reef Tackle Pendants							
Falls, — (none) —							
Strapping —							
Earings, 4 — — —	¾	21					
Sheets, 2 — — —	3	25	Sin. Should.	10	2		
			Double	10	1		
Strapping — — —	3	3½					
Seizing — —							
Laſhing — —							
Stayſail Hallyard —	1½	3					
	1½	17	Single	6	1		
Sheets, 2 — —	1½	17	Single	6	2		
Tacks, 2 — —	1½	1½					
Downhaller — —	1	11	Single	5	1		
NECESSARY ROPES.							
Viol Cabled — —							
Strapping —							
Seizing — —							
Laſhing —							
Winding Tackle Pendant							
Fall — —							

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY ROPES CONT.							
Strapping —							
Seizing —							
Catt Falls, 2 — — —	3	48	Double I.bo. Coaked	14	2		
Lanyards, 2 — —	2	10					
Stoppers 2 No. —	2	2					
Guy's Maſt-Head, 2 —	5	22					
Fore, 2 — —	5	12					
After, 2 — — —	3	14					
Fiſh Tackle Pendant — —	5½	6	Single Coaked	15	1	1	1
Fall — —	3	30	Long Tack.	24	1		
			Single	14	1		
Strapping — —	3½	7					
Seizing — —	¼	12					
Lanyard —	1½	10					
Anchor Stock Tacklefall —	2	18	Double	8	1	1	1
			Single	8	1	1	1
Bill Pendant — —	3	7					
Strapping — —	2½	2					
Seizing — —							
Stoppers Sheet Anchor, 2 —	5	5					
Beſt Bower, 2 — —	5	5					
Small Bower, 2 —	5	5					
Spare, 2 — —	5	5					
Seizings — —	¼	14					
Wing cabled, 2 No. —	5	12					
Dog, 2 No. — —	5	12					
Seizing — —	¼	16					
Stream Anchor, 2 —	3	3					
Kedge, 2 — —	2½	3					
Deck & Bit, cabled, 10 No.	7	22					10
Lanyards, 10 No.	2	25					
Seizings — —	1	48					
Preventer — —	5	10					
Ditto — — —	5	10					
Ditto — —	4½	10					
Ditto — — —	4	10					
Ditto — —	3½	12					
Ditto — — (none.)							
Ditto — (none.)							
Shank painters Sh. Anchor cab. 2	4½	7					
Beſt Bower, 2 —	4½	4					1
Small Bower, 2 —	4½	4					1
Spare, Cabled, 2 —	4½	7					
Seizing —	¾	9					
Ropes Buoy Sheet Anchor cabled	4	20					
Beſt Bower Cabled —	4	20					
Small Bower Cabled —	4	20					
Seizing —							
Stream Anch. Cabled —	3	24					
Kedge Cabled — —	2½	24					

16 and 14 Gun Sloop. 300 and 280 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Ropes Davit, 2 — — worn	2	6½					
Bell — — — —	2	1½					1
Buckets — — —		50	Coil Laſhing				
Swab, 2 — worn	2½	16	Single	9	2		
Entering, 6 — —	3	12					
Paſſing — — —							
Lanyard — —							
Slip — — — —							
Quarters, Poop and Stantion in the Waſte, — —	2½	80					14
Fore, Main & Mizen Tops		½	Coil Laſhing				
Wheel or Tiller White —	3	20	Single	10	2	2	
Strapping — —	3	1½					
Seizing — —							
Puddening of Anchors, worn	2½	60	Old Canvas.	yd			
	2	20		12			
Seizings,	¾	46					
Slings Buoy, 3 Pair — —	2½	40					
Lanyards, 2—worn	2	6					
Seizings, 4 —		½	of a Tar'Line				
Gun — — —	4½	4					
Nut — — —	3	3					
But, 4 Pair — —	4½	10					2
Hogſhead, 4 Pair — —	3½	12					3
Can-Hooks, 2 Pair —	4	6					
Straps for Wood Buoys —worn	3	5					
Swabs — worn	3	12					
Cable Bends, 6 — —	1½	36					
Rudder Pendants, cabled, 2 —	4	8					4
Lanyards —							
Falls — — —			Long Tackle Single				
Strapping — —							
Seizing — — —							
Stern Ladders, 4 Strands, worn	4	12					
Middle Rope, 2 worn	1	9					
Laſhings, 2 worn	1	6					
Futtock Staves, 10 — —	4	5½					
	2½	2					8
Swifters for Capſton-Bars —	1½	40					
Laſhing-Cables between Decks Sheep-Pens, Steep-Tubs, Tubs in the Tops, & Booms		1½	Coils Laſhing				
Nettings for the Quart. Waſte, Tops, and Barricadoes —	¼	380					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Hallyard for Top Lanthorn —							
Enſigns — —	¾	12					
Jacks — —	¾	8					
For Colours Head Line —		1	White-line				
Rope Bands —		2 lb	Marlines				
Pendant Slings —		18					
Awnings Ridge and Side Rope	2½	90	Single	9	3		
Stops — — —	¾	16					
				23	2		
Crowfeet — —	¾	75	Euphro	13	2		
				11	1		
Hallyard — —	1	28					
Ridge Tackle Fall —	2	9	Double	7	1		
			Single	7	1		
For different Uſes of the Ship			Snatch Iron	12	4	4	
			Bo. Hooks	10	3	3	3
			Coaked	9	3	3	3
Strapping — —	3	5					
Seizing — —							
LAUNCH.							
Stay — — — —	2	4					
Main Hallyard — —	1	9					
Sheet — — —	1	7					
Fore Hallyard — —	1	9					
Sheet — — —	1	6					
Outhaller — —	1	7					
Grapnel-Rope, cabled — —	3	35					
Painter — — — —	3	6					
Fenders, cabled, 6 — worn	3	8					
Lanyards, 6 — —	1	8					
Rudder Lanyards, 2 — —	1	1					
PINNACE, YAWL OR CUTTER.							
Hallyards Main and Fore, 2 —	1½	10					
Sheets, 4 — — —	1½	10					
Grapnel-Rope, cabled — —	3½	35					
Painter — — —	3½	5					2
Sternfaſt — — worn	2	5					
Slings, 2 Pair — —	4½	5				4	6
Seizings, 2 — —	3½	10					
Rudder Lanyards, 2 — —	¾	1					

EXPLANATORY REMARK ON THE PRECEDING TABLE.

Where Figures follow the Names of the Articles of Rigging, they denote the Number required of each: Thus, in Page 121, Article 2, by Gammoning, 1 —| 4½ | 40 | is meant, One Gammoning are neceſſary, made of Rope 4 Inches in Circumference, containing in the Whole 40 Fathoms in Length. And in the ſame Manner for other Articles.

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
BRIGS OF 160 TONS.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Woolding							
Gammonings, 1	4	26					
Shrouds fine, 1 Pair	4	8					
Collars fine, 2	3	2½					2
Seizings, 2		½	of a Tar'Line				
Laſhings, 2	¼	5					
Lanyards fine, 2	2	7					
Bobſtays cabled fine 2 Pair	4	11½					2
Collars fine 2	4	3					
Seizings, 2		½	of a Tar'Line				
Laſhings, 2	¼	6					
Lanyards fine, 2	2	9					
Horſes, 2	2½	9					6
Straps, 2	2	2					4
Lanyards, 2	1	4					
SPRITSAIL.							
Horſes, 2	2	6					
Stirrups, 4							
Braces, 2	2	30	Double	7	4		
Pendants, 2							
Strapping	2	4					
Lifts, 2	1	20	Single	6	2		
Beckets, 2	1	2					
Strapping	1	12					
Seizing							
Standing, 2	2	3					4
Straps, 2	2	1½					
Lanyards, 2	¾	3					
Hallyard	1	12	Single	6	2		
Strapping	1	1					
Seizing and Laſhing							
Slings, 1 Pair	3	3					
Seizing and Racking	¼	5					
Clew-Lines, 2	1½	16	Strap bound	6	2		
Strapping	1¼	1½					
Buntlines, 2	1	14					
Strapping	1¼	1½					
Earings, 4	¾	10					
Sheets cabled ſingle, 2	2½	22					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
JIBB.							
Horſes, 1	2½	9					
Seizings, 2							
Guy Pendants, 1 Pair	2½	20					
Falls, 2							
Strapping							
Laſhers, 4							
Out-Haller	2	12					
Tackle-Fall							
Strapping							
Stay	2½	14					
Strapping	2½	1					
Tacklefall	1½	12	Single	6	2		
Strapping	1½	1					
Hallyard	2	22	Single	7	1		
Strapping	2	1					
Downhaller	1½	18	Single	6	1		
Sheets ſingle, 2	2½	18	Single	8	2		
Pendants							
FORE-MAST.							
Woolding							
Girdlines, 2	2	35	Single	8	2		
Strapping	2	1					
Seizing							
Laſhings, 2	¼	8					
Pendants of Tackles cab. fine, 1 Pr.	6	5½	Sin. Coaked	13	2		2
Strapping	4	2					
Seizing	¼	6					
Runners of Tackles, 2	4	14	Double	10	2	2	2
Strapping	3	2					
Falls of Tackles, 2	2½	48	Single	10	2	2	2
			Thin Coak.	10	2	2	2
Strapping	3	5					
Seizing							
Shrouds cabled fine, 5 Pair	5	47	Dead Eyes	8	8		
Seizings Eye, 3	¼						
Throat, 8	¼	60					
Lanyards fine, 8	3	40					

Brigs of 160 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks	Thimbles
FORE-MAST CONTINUED.							
Ratling — — —	1	60					
Stay cabled fine 4 Strands —	7¼	7½	Heart	10	1		
Seizings, 3 —	2¼	8					
Lanyard fine — —	3	7					
Collar cab. 4 Str. fine doub.	4	3½	Heart	10	1		
Seizings, 2 —	2¼	6					
Laſhing — —	1¼	4					
Preventer Stay cabled 4 Str. fine	5¼	7½	Heart	8	1		
Lanyard fine —	2¼	7					
Coll. cab. 4 Str. fine double —	3½	3½	Heart D. ſc.	8	1		
Laſhing —							
Seizings, 2 —							
Catharpin Legs 4 — —	3	6					
Seizings, 8 —	1¼	25					
Crowfoot for the Top — —	2¼	40	Euphro	12	1		2
Tackle —	1	4					
Strapping	1	1					
Jeers { Tye — — —	5	10	S. t. co.	14	2		
Falls, 2 Pair —	2¼	40	Double co.	9	4	2	2
Strapping — —	2¼	1					
Seizing — — —							
Laſhing at the Maſt Head —	2	16					
Yard — —							
Stoppers — —							
Horſes, 2 — — —	3	7½					2
Stirrups, 4 — — —	2	2					2
Seizings, 2 — — —							
Lanyard — — —	1¼	2					
Yard Tackle Pendants, 2 —	4¼	6	Do. thin Co.	10	2		
Falls, 2 — —	2¼	48	S. thin Co.	11	2	2	2
Strapping — —	4	2	Single	9	2		
Seizing — —							
Inner Tric. Lines, 2							
Outer Tric. Lines, 2							
Strapping — —							
Braces, 2 — — —	2¼	44	Single	8	4		
Pendants, 2 — — —	3	4	Single	8	2		
Preventer, 2 — —	2¼	5					
Strapping — — —	2¼	3					
Seizing — — —							
Laſhing — — —							
Preventers *(in War only)* 2							
Braces Preventer Strapping —							
Seizing —							
Lifts, 2 — — — —	2	40	Single	7	4		
Span for the Cap — —	3	3					
Short Span — — —	2¼	1					
Strapping — — —	2¼	3					
Seizing — — —							
Jigger Tackle, No. 2 —							
Strapping —							
Truſs Pendants, 2 — — —	4	9					4
Falls, 2 — —	1½	26	Double	6	2	2	2
			Single	6	2	2	2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron. Hooks.	Thimbles
FORE-MAST CONTINUED.							
Strapping — —	2	3					
Eye Seizings, 2 —	¼	8					
Nave Line — —							
Puddening the Yard — worn	4	4					
Clew-garnets, 2 — — —	2	34	Single	8	4		
			Sin. Strapbo.	8	2		
Straps ab. the Yard	2	4					
Strapping — —	2	1					
Seizing — —							
Laſhing — —							
Buntline Legs, 4 — — —	1¼	28	Double	6	4		
Falls, 2 — — —	1¼	20	Single	6	6		
Strapping — —	2	7					
Leechline Legs, 2 — — —	1¼	26	Single	6	6		
Falls, 2 — — —	1¼	26					
Strapping — —	1¼	4					
Slablines, 2 — —	1½	12	Single	5	1		
Strapping — —							
Bowlines, 2 — — —	2½	28	Single	9	2		2
Bridles, 2 — —	2½	3					
Strapping — —	3	2					
Seizing — —							
Laſhing — —	1	4					
Earings, 6 — — —	1	20					
Sheets Cabled, 2 — —	3	36	Sin. Coaked	11	2		2
Strapping — —	3	2½	Single				
Seizing — —	¼	7					
Stoppers — —			Double				
Tacks Taper and Cabled, 2	4	22	Sin. Should.				
Strapping — —	3	3					
Seizing — —	¼	6					
Stoppers, 2 — —							
Lanyards 2 —							
Gammoning the Bumkin, worn —							
Lanyards, 2 — —							
Lany. for Pudden & Dolphin —							
Slings — —							
Strap — —							
Seizings — —							
Lanyard — —							
Stayſail Hallyard —							
Sheets, 2 — —							
Tack — —							
Downhaller —							
Strapping —							
Studd. Sail Hallyard, Inner, 2 Pr.	1½	25	Single	7	6		
Outer, 2 Pr. —	2	42	Single	7	4		
Sheets, 2 Pr. — —	1½	7					
Tacks, 2 Pr. — —	2	32	Single	7	2		
Strapping — —	2	10					
FORE-TOP-MAST.							
Burton Pendants, 1 Pair —	2½	4				2	
Falls, 2 — — —	1½	30	Single	6	2	2	2
				6	2	2	2
Strapping — —	2	2	Single				
Shrouds fine 3 Pr. —	3½	28	Dead Eyes	6	6		
Seizings Eye, 3 —		½	of a Tar'Line				

Brigs of 160 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles.
FORE-MAST CONTINUED.							
Throat, 6 — End, 6 — —		1	of a Tar'Line				
Lanyards fine, 6 — —	2	24					
Ratling — — — —	¾	35					
Standing Backſtays fine 3 Pr. —	3½	38	Dead Eyes	6	4		
Seizings Eye, 3 —		½	of a Tar'Line				
Throat, 6 End, 6		1	Tarr'd Line				
Lanyards fine, 6	2	16					
Breaſt Backſtay Runners, 2 —							
Falls, 2 — —							
Strapping — —							
Stay Cabled 4 Strands fine —	4	13					
Collar fine — —	3	2½	Single	12	1		
Tackle — — —	2	8	Single	7	2		
Strapping — —	3	1½					
Seizing — — —	¼	7					
Preventer Stay cab. 4 Str. fine —							
Collar, fine —							
Tackle — —							
Strapping — — —							
Seizing — — —							
Laſhing the Col.							
Shifting Backſtays, fine, 1 Pair —	3½	9½					
Tackles 4 No. — —	1½	8	Double	6	1	1	1
			Single	6	1	1	1
Strapping — — —	2	1					
Futtock Shrouds, fine, 3 Pair —	3½	11	Futtock Pla.	6	6	6	6
Seizing Upper, 6 Lower, 6	¼	20					
Ratling —	1	10					
Top Rope Pendants, fine —	4½	11	Single Iron Bound Coaked	13	1		1
Falls, 2 — — —	2½	30	D. Iron Bo.	11	2		
Tye — — — —	3½	10	S. D. Co.	11	1		
Strapping — — —	3½	1					
Seizing — — —							
Laſhers at the Maſt Head, 2	1	7					
Yard — — —	¾	3					
Hallyards — — —	2	32	Do. thin Co.	10	1		
			Sin. Ditto	10	1	1	1
Strapping — — —	3	2½					
Seizing — — —							
Horſes, 2 — — —	2½	5½					
Stirrups, 4 — —							
Braces, 2 — — —	2	44	Single	7	4		
Pendants, 2 — —	2½	4½	Single	7	2		
Preventer, 2 —							
Strapping — — —	2	3½					
Lifts, 2 — — — —	2	34	Sifter	14	2		
			Single	7	4		
Beckets, 2 — — —	2	2					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles.
FORE-TOP-MAST CONTINUED.							
Strapping — — —	2	4					
Seizing — — —							
Parrel Ropes, 2 — — —	2	7	Parrel	11	1		
Racking and Seizing —		½	of a Tar'Line				
Clewlines, 2 — — — —	2	44	Sin. Str. bo.	7	4		
			Single	7	2		
Strapping — —	2	4					
Buntlines, 2 — — —	1¾	30	Single	6	4		
Strapping — —	1½	1½					
Leechlines, 2 — — —	1	13	Single	5	2		
Strapping — —	1	1					
Bowlines, 2 — —	2	32	Single	7	2		2
Bridles, 4 — — —	2	5					4
Strapping — —	2	1½					
Laſhing — —	¼	5					
Reeftackle Pendants, 2 — —	2	22	Single	6	4	2	2
Falls, 2 — — —	1	28					
Strapping — —	1¾	1					
Earings, 8 — — —	¼	30					
Sheets, 2 — — — —	3½	26	Sin. Shoul.	12	2		
			¼ do. th & thin	12	2		
Straps for Sheet Blocks, 2	4	3					
Quarter Blocks, 2 —	3	5					
Laſhers for Quarter Blocks, 2	1	5					
Seizings — — —	¼	12					
Span — — — worn	2¾	3					
Stoppers, 2 — —							
Slings, 1 Pair — —	2¾	4½					
Stayſail Stay — —	2¾	13	Single	9	1		
Tackle — —	1	6	Single	5	2		
Hallyard — —	2	22	Single	7	1		
Strapping — —	2	1					
Sheets, 2 — —	2¾	16	Single	8	2		
Strapping — —	2¾	1½					
Outhaller — —	1¾	8	Single	6	1		
Downhaller — —	1	14	Single	5	1		
Strapping — —	1	½					
Studdingſail Hallyards, 2 Pair	2	45	Single	7	6		
Sheets, 2 Pair — —	1½	9	Single	7	2		
Tacks, 2 Pair —	2	40	Single	7	2		
Downhallers, 2 —	¼	30					6
Boom Tackles, 2 —							
Tails and Straps, 2 —	2	10					
FORE-TOP-GAL. MAST.							
Shrouds, 3 Pair — —	2	32					8
Lanyards, 6 — — —	¼	8					
Standing Backſtays, 2 Pair —	2	24					2
Lanyards, 4 — — —	¼	6					
Stay — — —	2¾	19					1
Strapping — —	2	½					
Tackle — —							
Strapping — —							
Flagſtaff Stay — —							
Hallyards, 1 Pair — —	¼	18					

Brigs of 160 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
FORE-TOP-GAL. MAST CONT.							
Tye — — — — —	2	9					
Hallyard — —	1¾	14	Single	5	2		
Strapping — — —	1½	1½					
Horſes, 2 — — — —	1½	4½					
Braces, 2 — — — —	1	42	Single	5	4		2
Pendants, 2 — — —							
Strapping — — —	1	1					
Lifts ſingle, 2 — — —	1¼	22					2
Strapping — — —							
Parrel Ropes, 2 — — —	1	2½	Parrel	6	1		
Clewlines, 2 — — —	1	34	Single	5	4		
Strapping — — —	1	1					
Bowlines, 2 — — — —	1	42					6
Bridles, 2 — — — —	1	2					
Strapping — — —							
Earings, 2 No. — — — —		½	of a Tar'Line				
Shifting Backſtays, 1 Pair —							
Tackles, 2 No. —							
Strapping — —							
Studdingſail Hallyards, 2 Pair —	1¼	40					
Sheets, 1 Pair — —	1	12					
Tacks, 2 Pair — —	1¼	34					
Downhallers, 2 No. —		13					
Royal Hallyards —	2	28					
Strapping — — —							
MAIN-MAST.							
Woolding — — —							
Girdlines, 2 — — —	2½	44	Single	8	2		
Strapping — — —	2	1					
Seizing — — —							
Laſhings, 2 — — —	¾	8					
Pendants of Tack. cab. fine, 1 Pr.	5	7	Sin. Coak.	13	2		4
Strapping —	4	2					
Seizing —	¾	6					
Runners of Tackles, 2 —	4	16	Do. thin Co.	10	2	2	2
Strapping — —	3	2					
Falls of Tackles, 2 — — —	2½	50	Sin. t. Co.	10	2	2	2
Strapping — —	3	5					
Seizing — —							
Shrouds cabled, fine, 5 Pair —	5	70	Dead Eyes	8	10		
Seizings Eye, 4 — —							
Throat, 10 — —	¾	40					
End 10 — —	¾	40					
Lanyards, fine, 10 — —	3	50					
Ratling — — — —	1	85					
Stay cabled 4 Strands, fine —	8	11½	Heart	12	1		
Seizing — — —	1	10					
Lanyard, fine — —	3	9					
Collar cabled 4 Strands, fine	6	4	Heart	12	1		
Worming — —	¾	25					
Seizing — —	1	10					
Laſhing — — worn	2½	9					
Preventer Stay cab. 4 Strands fine							
Lanyard, fine —							
Col. cab. 4 ſtr. fine. do.							
Laſhing — —							

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Seizings, 3 — —							
Catharpin Legs, 4 — —	3	7					
Seizings, 8 — —	¾	25					
Stay Tackle Pendant — —	4	3	Do. thin Co.	11	1		
Falls — — —	2½	28	S. thin Co.	11	1	1	2
				9	1	1	1
Strapping — —	3	2½					
Seizing — —	¾	8					
Laſhing — —	1	7					
			Do. thin Co.	11	1		
Fore-Stay Tackle Fall — —	2	28		11	1	1	2
			S. thin Co.	9	1	1	1
Strapping —	3	2½					
Seizing —	¾	8					
Crowfoot for the Top — —	¾	50	Euphro	14	1		2
Tackle — — —	1	4					
Strapping — —	1	1					
Jeers { Tye — —			Double	11	1		
Falls, 2 — —	3	34	Single	11	2		
Strapping — —	3½	10					
Seizing — — —							
Laſhers to the Maſt Head, 2	2	18					
Yard — —	1½	4					
Stoppers, 2 — —							
Horſes, 2 — —	2½	8					2
Stirrups, 4 — —							
Seizings, 2 — —							
Lanyard 1 — —							
Yard Tackle Pendants, 2 —	4½	6½	Do. thin Co.	10	2	2	2
			S. thin Co.	11	2	2	2
Falls, 2 —	2½	54	Single	9	2		
Straps — —	4	2½					
Strapping — —	3	3					
Seizing — —							
Inner Tricing-Lines							
Outer Tricing-Lines							
Strapping —							
Braces, 2 — — —	2	38	Sin. Coak.	7	4		
Pendants, 2 — —	2½	5	Sin. Coak.	7	2		
Preventer, 2 — —							
Strapping — —	2½	2½					
Seizing — —							
Preventers *(in War only)* 2							
Strapping — —							
Seizing — — —							
Lifts, 2 — — — —	2	46	Single	7	4		
Span for the Cap — —	2½	3					
Short Span — —	2½	1					
Strapping — —	2	3					
Seizing — — —							
Jigger Tackle — —							
Strapping — —							
Truſs Pendants, 2 — —	4	11					4
Falls, 2 — —	1½	30	Double	6	2	2	2
			Single	6	2	2	2

Brigs of 160 of Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Strapping —	4	7½	Horſe down the Maſt				
			Dead Eye	7	1		
Eye Seizings, 2 —	3	2	Strap. D. E.	7	1		
Lanyard — —	2	4					
Seizings — —	¼	6					
Puddening the Yard — worn							
Clewgarnets, 2 — —							
Strap about the Yard							
Strapping —							
Seizing — —							
Laſhing — —							
Buntline Legs, 4 —							
Falls, 2 — —							
Strapping —							
Leechline Legs, 2 —							
Falls, 2 — —							
Strapping —							
Slablines, 2 — —							
Strapping —							
Bowlines, 2 — —							
Bridles, 4 —							
Strapping —							
Seizing — —							
Laſhing — —							
Tackle —							
Strapping —							
Earings, 6 — —							
Sheets, cabled, 2 —	3	25	Single	11	2		
Strapping —	3½	3					
Seizing — —							
Laſhers, 2 — —							
Stoppers, 2 — —							
Tacks Taper and Cabled, 2							
Stoppers, 2 — —							
Lanyards, 2 —							
Lany. for the Pudden & Dolphin —							
Slings, 1 Pair — —							
Straps — — —							
Seizing — —							
Lanyard — —							
Quarter Tackle Pendants, 2							
Falls, 2 — —							
Strapping —							
Seizing —							
Luff Tackles, 4 No. — —	2½	40	Double	10	2	2	2
			Single	10	2	2	2
Strapping —	2½	4					
Seizing — —							
Stayſail Stay — — — worn	4	11½					2
Collar — —	3	2					
Seizings —	¼	6					
Lanyard — —	1	2					
Hallyard — —	2	21	Single	7	3	1	1
Sheets, 2 — —	2½	7	Single	7	2	1	1
Tacks, 2 — —	2½	2					

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Downhaller — — —	1	10	Single	5	1		
Strapping — — —	2	3					
Studd. ſail Hallyards, Inn. 2 Pr.	2	34	Single	9	6		
Outer, 2 Pr. —	2½	58	Single	9	4		
Sheets, 2 Pair — —	2	14					
Tacks, 2 Pair — —	2½	32	Single	9	2		
Strapping — —	2	12					
Boom Guy Pendants	4½	7					1
Tackle Fall —	2½	20	Double	10	1	1	1
			Single	10	1	1	1
Ditto — —	1½	5	Double	6	2	2	2
Tricing Line — —	1½	22	Single	6	2		
Peek Line — —	1	18	Single	5	1		
Hanks — worn	2½	20					
Trucks — —					36		
Lacing — —	1	30					
Strapping —	2½	3					
	1½	3					
	1	1	Sin. I. bound				
Gaff Topping Lift	4	8½	Coaked	13	1		
Span — —	4	3					1
Hallyards — —	2½	24	Double	9	1		
			Single	9	1	1	1
Strapping —	3½	1½					
	2½	2					
Tye —	4	7½	Single I. bo.	13	1		
			Double thin	13	1		
Hallyards —	2½	28	Single thin	13	2	2	2
			Single I. bo.	14	1		
Boom Topping Lift	4½	16	Single	11	1		
Straping —	3	7					
Fall —	2	16	Double	8	1		
			Single	8	1	1	1
	3½	3					
Strapping —	3	3					
	2	2					
MAIN-TOP-MAST.							
Burton Pendants, 1 Pair —	2½	4					2
Falls, 2 — — —	1½	34	Double	6	2	2	2
			Single	6	2	2	2
Strapping — —	2	2					
Shrouds, fine, 3 Pair —	3½	31	Dead Eyes	6	6		
Seizings Eye, 3 —		½	of a Tar' Line				
Throat, 6 —		1	Tar' Line				
End, 6 — —							
Lanyards, fine, 6 —	2	24					
Ratling — —	¼	40					
Standing Backſtays, fine, 3 Pr. —	3½	46	Dead Eyes	6	4		
Seizings Eye, 3 —		½	of a Tar' Line				
Throat, 6		1	Tarr'd Line				
End, 6							
Lanyards, fine, 6	2	16					
Breaſt Backſtay Runner —							
Fall — —							

Brigs of 160 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Strapping — —							
Stay Cabled 4 Strands, fine —	4	13					
Collar, fine — — —	3½	2	Single	12	1		
			Double	7	1		
Tackle — — —	2	12	Single	7	1	1	1
Strapping — —	3	1½					
Seizings — —	2	1½					
Laſhing — —							
Preventer Stay, Cabled 4 ſtr. fine	3½	12					
Collar, fine —							
Tackle — —							
Strapping							
Seizing — —							
Laſhing the Col.	1	6					
Shifting Backſtays, fine, 1 Pair	3½	10½					1
Tackles, 4 No. —	1½	8	Double	6	1	1	1
			Single	6	1	1	1
Strapping — —							
Futtock Shrouds, fine, 3 Pair	3½	12	Pla with D.E	6	6	6	6
Seizings Upper, 6	¼	20					
Lower, 6							
Ratling — —	1	12					
Top Rope Pendants, fine	4½	12	Sin. I. bound	13	1		1
Falls, — —	2½	32	D. I. b. Co.	11	2		
Tye — — —	3½	11	S. dou. ſcor'd	11	1		
Strapping — —	3½	1					
Seizing — —							
Laſhers at the Maſt Head	1½	7					
Yard — —	¾	3					
Hallyards — — —	2	34	Do. thin Co.	10	1		
			S. thin Co.	10	1	1	1
Strapping — —	2½	2½					
Seizing — —							
Horſes, 2 — — —	2½	5½					
Stirrups, 4 — —							
Braces, 2 — — —	2	45	Single	7	4		
Pendants, 2 — —	2½	5	Single	7	2		
Preventers, 2 —							
Span ab. the Mizen Maſt —							
Strapping — —	2	2½					
Lifts, 2 — — — —	2	36	Siſter	14	2		
			Single	7	4		
Beckets, 2 — —	2	2					
Strapping — —	2	4					
Seizing — —							
Parrel Ropes, 2 — —	2	7	Parrel	11	1		
Racking and Seizing		½	of a Tar'd Line				
Clew-lines, 2 — — —	2	48	Sin. Str. Bo.	7	4		
			Single	7	2		
Strapping — —	2	4					
Bunt-lines, 2 — — —	1½	34	Single	6	4		
Strapping — —	¾	1½					
Leech-lines, 2 — — —	1	14	Single	5	2		
Strapping — —	1	1					
Bowlines, 2 — — —	2	34	Single	7	2		2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Bridles, 4 — — —	2	8					
Strapping — —	2	1					4
Seizing — —							
Frapping and Laſhing	1	7					
Reeftackle Pendants, 2 —	2	24	Single	6	4	2	2
Falls, 2 — — —	1¾	32					
Strapping — —	1¼	1					
Earings, 8 — — —	¾	30					
Sheets, 2 — — — —	3½	30	Shoul. Co.	12	2		
			¼ Double	12	2		
Straps for Sheet Blocks, 2 —	4	3	Thick & thin				
Quarter Blocks, 2 —	3	5					
Laſhers for Quart. Blocks, 2	1	5					
Seizings, 2 — — —	¾	12					
Span — — — worn	2½	3					
Stoppers, 2 — — —							
Slings, 1 Pair — —	2½	4½					
Stayſail Hallyard — —	2	22	Single	7	1		
Strapping —	2	1					
Sheets, 2 — — —	2	19	Single	7	2		
Strapping — —	2	1½					
Pendant — —							
Tack — — — —	2	2					
Downhaller — — —	1	12	Single	5	1		
Strapping — — —	1	1					
Brails — — —							
Middle Stayſail Stay — —	2½	15	Single	9	1		
Tackle —	1½	27	Single	6	2		
Hallyard — —	2	21	Single	7	1		
Sheets, 2 — —	2½	24	Single	7	2		
Tack — — —	1½	6					
Downhaller — —	1	15	Single	5	1		
Strapping — —	2	4					
Tricing-line							
Studdingſail Hallyards —	2	50	Single	7	6		
Sheets, 2 Pair — —	1½	10	Single	7	2		
Tacks, 2 Pair — —	2	42	Single	7	2		
Downhallers, No. 2 — —	¾	32					6
Boom Tackles, 2 No. —							
Laſh. for Booms — worn	2	16					
Tailing and Strapping —	2	10					
MAIN-TOP-GAL. MAST.							
Shrouds, 2 Pair — — —	2	32					8
Lanyards, 4 — —	¾	8					
Standing Backſtays, 2 Pair —	2	27					12
Lanyards, 4 — —	¾	6					
Stay — — —	2½	14					1
Strapping — —	2	½					
Flagſtaff Stay — —							
Hallyards, 1 Pair — —	¾	18					
Tye — — —	2	9½					
Hallyard — — —	1½	16	Single	5	2		

Brigs of 160 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-TOP-GALL. MAST CONT.							
Strapping — — —	1	1					
Horſes, 2 — — —	1	4					
Braces, 2 — — —	1	44	Single	5	4		
Pendants, 2 — —							
Strapping — —	1	1					
Lifts ſingle, 2 — —	1	23					2
Strapping — —							
Parrel Ropes, — —	1	2	Parrel	6	1		
Clewlines, 2 — —	1	36	Single	5	4		
Strapping — —	1	1					
Bowlines, 2 — — —	1	42					4
Bridles, 4 — —	1	4					2
Strapping — —							
Earings, 4 — —			of a Tar'Line				
Shifting Backſtays, 1 Pair							
Tackles, 2 No.							
Strapping —							
Stayſail Stay — —	2	17	Single	7	1		
Hallyard — —	1	24	Single	5	1		
Sheets, — —	1	26	Single	5	2		
Tacks — — —	1	4					
Downhaller — — —		18	Single	4	2		
Strapping — —	1	2					
Studdingſail Hallyards, 2 Pair	1	48	Single	6	6		
Sheets, 2 Pair —	1	30					
Tacks, 2 Pair —	1	38	Single	6	4		
Downhallers —		28					
Royal Hallyards	2	3					
Strapping — —							
NECESSARY ROPES.							
Viol Cabled — —							
Strapping —							
Seizing — —							
Laſhing —							
Winding Tackle Pendant							
Fall —							
Strapping							
Seizing							
Catt Falls, 2 — —	2	36	Double Ibo. Coaked	11	2		
Lanyards, 2 — —	1	4					
Stoppers 2 No. —	1	2					
Guy's Maſt-Head, 2 —	4	20					
Fore, 2 — —	4	12					
After, 2 — —	2	14					
Fiſh Tackle Pendant — —	4	3				1	2
Fall — —							
Strapping — —							

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY ROPES CONT.							
Seizing — —							
Lanyard —							
Anchor Stock Tacklefall —							
Bill Pendant — —							
Strapping — —							
Seizing — —							
Stoppers Sheet Anchor, 2	4	4					
Beſt Bower, 2 — —	4	4					
Small Bower, 2 —	4	4					
Spare, 2 — —							
Seizings —	1	10					
Wing cabled, 2 No.							
Dog, 2 No. — —							
Seizing — —							
Stream Anchor, 2 —	2	3					
Kedge, 2 — — —	2	3					
Deck & Bit, cabled, 10 No.	6	12					6
Lanyards, 10 No.	2	16					
Seizings — —	1	36					
Preventer —	4	9					
Ditto — — —	4	9					
Ditto — —	3	9					
Ditto — — —	3	9					
Ditto — —	2	11					
Ditto — — (none.)							
Ditto — (none.)							
Shank painters Sh. Anchor cab. 2	4	4					
Beſt Bower, 2 —	4	4					1
Small Bower, 2 —	4	4					1
Spare, Cabled, 2 —							
Seizing —	1	10					
Ropes Buoy Sheet Anchor cabled	4	18					
Beſt Bower Cabled —	4	18					
Small Bower Cabled —	4	18					
Seizing —							
Stream Anch. Cabled —	3	18					
Kedge Cabled — —	2	16					
Ropes Davit, 2 — — worn							
Bell — — —							
Buckets — —							
Swab, 2 — worn							
Entering, 6 — —	2	9					
Paſſing — —							
Lanyard —							
Slip — — —							
Quarters, Poop and Stantion in the Waſte, worn	2	130					
Fore, Main & Mizen Tops							
Wheel or Tiller White —	2	10	Single	7	4		
Strapping — —	2	2					
Seizing —							
Puddening of Anchors, worn	2	40					
	2	14					
Seizings,	1	36					

Brigs of 160 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Slings Buoy, 3 Pair — —	2½	30					
Lanyards, 2—worn	1	6					
Seizings, 4	¼	16					
Gun — —							
Nut — —							
But, 4 Pair —	4½	5					2
Hogſhead, 4 Pair —	3¾	8					3
Can-Hooks, 2 Pair	3½	4					
Straps for Wood Buoys —worn	3	4					
Swabs —	3	9					
Cable Bends, 6 — —	1½	32					
Rudder Pendants, cabled, 2							
Lanyards							
Falls — — —							
Strapping —							
Seizing — —							
Stern Ladders, 4 Strands, 2 worn							
Middle Rope, 2 worn							
Laſhings, 2 worn							
Futtock Staves, 8 — —	4	4					
	2¾	2					8
Swifters for Capſton-Bars							
Laſhing-Cables between Decks							
Sheep-Pens, Steep-Tubs, Tubs in the Tops, & Booms	¼	220					
Nettings for the Quart. Waſte, Tops, and Barricadoes —							
Hallyard for Top Lanthorn							
Enſigns —	1	12					
Jacks —	¾	8					
For Colours: Head Line —		1	White-line				
Rope Bands		2 lb	Marlines				
Pendant Slings —	¼	18					
Awnings Ridge and Side Rope-							
Stops — —							

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Crowfeet — —							
Hallyard —							
Ridge Tackle Fall —							
For different Uſes of the Ship			Snatch Iron	12	2		
			Bo. Hooks	10	2		
			Coaked	9	2		
Strapping —							
Seizing —							
LAUNCH.							
Stay — — —							
Main Hallyard —							
Sheet — —							
Fore Hallyard —							
Sheet — —							
Outhaller —							
Grapnel-Rope, cabled —							
Painter — — —							
Fenders, cabled, 6 — worn							8
Lanyards, 6 —							
Rudder Lanyards, 2 —							
PINNACE, YAWL or CUTTER.							
Hallyards Main and Fore, 2 —	1¼	10					
Sheets, 4 — —	1¼	10					
Grapnel-Rope, cabled —	3	35					
Painter — —	3	5					2
Sternfaſt — — worn	2	5					
Slings, 2 Pair —	4½	7				4	6
Seizings, 2 —	1¼	10					
Rudder Lanyards, 2 —	¼	1					

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
CUTTERS OF 200 TONS.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Gammoning — —							
Lanyards —							
Shrouds, 1 Pair —	5½	14					
Tackle Falls, 2	2½	38	Double	10	4	2	2
Horſes — —							
Lanyards —							
Strap — —							
JIBB.							
Stay cabled, 4 ſtrands, fine Hallyard — —	5	35	Sin. Coak.	14	2		
Tackle-Fall —	3½	40	Treb. Coak.	12	2	1	2
Jack —	6½	24	Snatch iron-bound co.	15	1		
Sheets cable laid, 2 —	5	18	Single	14	2	1	2
Downhaller — —	2	24	Single	8	1		
Inhaller — —	2½	15	Double co.	8	1		
			Snatch ditto	8	1	1	1
Heelrope — —	3	21	Snatch I. bd. Coaked	13	1		
Flying Jib Hallyard —	2½	35					
Sheets, 2 —	2½	24					
Jack —	2½	30					
Downhaller	2	24					
FORE-MAST.							
Sail Hallyards —	2½	50	Double co.	10	1		
			Single	10	1	1	1
Downhaller	2	30	Single	8	1	1	1
Jack Tackle	2½	10	Single	8	2	1	1
Bowline —	3	14	Single	8	2	1	1
Bridles —							
Sheets —	3	7	Single	10	2	1	2
Fore Burton Pendants, 1 Pair							
Falls, 2 — —							
MAIN-MAST.							
Girdlines, 2 — — —	2½	50	Single	9	2		
Laſhings, 2 — — —	1	10					
Pendants of Tackles, 2 —	6	26	Single co.	15	2		
Runners of Tackles, 2 — —	5½	24	L. tackle do.	20	2	2	2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Falls, 2 — —	3½	45	Sin. Coaked	11	2	2	2
Shrouds cabled fine, 4 Pair —	8	84	Dead Eyes	12	8		
Seizings Eye, 4 —							
Throat, 8 —	1	68					
End 8 — —							
Lanyards, fine, 8 —	4	40					
Ratling — — —	1½	120					
Stay cabled 4 Strands, fine —	13	16	Dead Eyes	18	1		
Seizings, fine, 3 —	1½	10					
Lanyard, fine —	4	10					
Worming — —	1½	60					
Laſhing — —	2	25					
Preventer Stay cab. 4 Strands	6½	18	Dead Eyes	9	1		
			Iron Bound	9	1		
Lanyards, fine	3	4					
Seizing —	1	9					
Boom Topping Lift —	4½	26	S. Iron Bo. Coaked	12	1		
			Single co.	12	1		
Runner —	4	12	Single ditto	13	1		
			Double ditto	12	1		
Fall —	2½	32	Single ditto	9	1	1	1
Guy Pendant —	5	9					1
			Double	12	1	1	1
Tackle Fall	3	30	Single	12	1	1	1
Gaff Span — —	4½	5					
Downhaller Peek	2	28	Single	8	1		
Throat —	2	38	Single	8	1		
Inner Tye —	6	13	S. Iron bo. Coaked	14	2		
Hallyard —	3	56	D. coaked	14	2		
Outer Tye —							
Hallyard —	3½	90	S. iron bo. co.	12	3		
			Dou. coaked	12	2		
Earings, Inner —	1½	18					
Outer —							
Reef, 2 —							
Lacing — —							
Sheet — —	3	60	Treb. coaked	15	2		
Rope —							

Cutters of 200 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Jack Tackle —	2½	20	Double	8	1	1	1
			Single	8	1	1	1
Luff Tackles, No. 2	2½	40	Double	11	2	2	2
			Single	11	2	2	2
Main Reef Pendants, fine, 4	5	7					
	5	7					
	5	9					
	5	10					
TOP-MAST.							
Tackle Fall —	3	30	Long Tackle	20	1	1	1
			Single	11	1	1	1
Tye —	3	26					
Hallyard —	2	32	Double	9	1		
			Single	9	1	1	1
Horſes — — —	2½	8					
Braces, 2 — — — —	2	60	Single	8	2		
Lifts, 2 — — —	2	45	Single	8	4		
Parrel Ropes, 2 — —	2	8	Parrel	12	1		
Racking and Seizing	¾	10					
Clewlines, 2 — —	1½	44	Single	6	4		
Buntlines — —	1½	44	Single	6	2		
Bowlines, 2 — — —	2	66	Treble	9	1		2
Bridles, 4 — —	2	7					4
Sheets, 2 —	3½	42	Sing. ſhould.	10	2		
Quarter Block —			Double, and Dou. ſcor'd	12	1	coak.	
Tryſail Sheet —	2	33	Treble	11	2	2	2
Downhaller —	2	24					
Lacing —	2	24					
Studdingſail Hallyards, 2	2	96					
Sheets, 2 —	2	38					
Tacks, 2 —	2	90					
Downhallers, 2 —	2	30					
TOP-GALLANT-MAST.							
Standing Backſtays, 1 Pair —	2½	60					
Tackles, 2 —	2	28	Single	8	8	8	8
Stay — —	3	30					
Hallyards —	2	40	Single	9	2		
Top Rope —	4	28	Double	9	1		
Fall — —	2	45	Single	9	1	1	1
Tricing Line — —	2	30	Single	8	2		
CROSS-JACK-YARD.							
Clewlines, 2 —	2	40					
Braces, 2 —	2½	60	Single	8	2		
Sheets, 2 —	2½	14					
Hallyard —	2½	50	Dou. coak'd	9	1	1	1
			Single ditto	9	1	1	1
Lifts running —	3	35	Single	8	2		2
Buntlines, 2 —	2	40					
Tacks, 2 —	2½	14					
Horſes, 2 —	3	12					
Stirrups, 4 —	2	8					
Horſe down the Maſt —	5	25	Dead Eye	7	2		
Strap —	3½	4					
Lanyard —	2½	5					
Yard Ropes —							

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Fiſh.	Iron Hooks.	Iron Thimbles
NECESSARY ROPES.								
Catt Falls, 2 — — —	3	44	Dou. I. b. co.	12	2			
Fiſh Tackle Pendant —	4	3					1	1
Stoppers Sheet Anchor	5	5						
Beſt Bower — —	5	5						
Small Bower —	5	5						
Stream Anchor —	2½	3						
Kedge ditto —	2	3						
Deck & Bit, cabled, 6	6½	7½						4
Lanyards, 6	2	10						
Seizings, 12 —	¾	20						
Shank painters Sh. cab.	4	6						
Beſt Bower	4	4						
Small Bower	4	4						
Ropes Buoy Sheet cabled	4	18						
Beſt Bower —	4	18						
Small Bower	4	18						
Stream Anch.	3	20						
Kedge ditto —	2½	20						
Entering —	3	10						
Wheel (white)	2	12	Single	7	2			
Puddening of Anchors, worn	2½	50						
	2	18						
	1¾	42						
	2½	30						
	1½	6						
Buoy Slings — —	4	12						
Hogſhead Slings, 1 Pair	3	3						
Can-Hooks, 2 Pair	4	6						
Cable Bends, 6 —	1½	34						
Nettings for the Tops, Quart. Waiſte, and Barricadoes —	¼	540						
Hallyards for Enſigns	1¾	20						
Slings Pendant, &c. —	1¼	24						
For different Uſes of the Ship			Snatch Iron-bound coa. Bulkhead	12 10 9	2 2 2	2 2 2	2 2 2
Ridge Ropes for the Quarters	2½	108						
BOAT.								
Hallyards Main and Fore —	1½	10						
Sheets, Main and Fore —	1½	10						
Grapnel Ropes, cabled —	3	35						
Painter — — —	3	5						
Slings, 2 Pair — —	4½	5						
Seizings —	¾	10						
Rudder Lanyards, 2 — —	¾	1						
Sternfaſt — — —	2	5						

FITTING the RIGGING in the HOUSE.

Spunyarn — — —	20 Cwt.
Lines tarred — — —	8 No.
Marline — — —	15 lb.
Old Canvas — — —	140 Yards
Tar — — —	1½ Barrels
Tallow — — —	28 lb.
Twine Ordinary — — —	2 lb.
Length of the Warp of the Main Shrouds	18 Yards

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
SLOOPS OF 130 TONS.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
BOWSPRIT.							
Gammoning — — —	3½	10	Hearts	8	2		
Lanyards — —	2½	2½					
Shrouds, 1 Pair —	3½	12					
Tackle Falls, 2 —	2	12	Single	8	2	2	2
Horſes — —	3	13					2
Lanyards — —	1	3½					
Strap — — —	2½	3					2
JIBB.							
Stay cabled, 4 ſtrands, fine —	4½	21					
Halyard — —	2½	33	Single	9	2	1	1
Tackle Fall —							
Jack — — —							
Sheets cable laid, 2 —	3½	20	Single	10	2	1	2
Downhaller —	1½	22	Single	6	1		
Inhaller — — —							
Heelrope — — —							
Flying Jib Halyard —							
Sheets —							
Jack —							
Downhaller —							
FORE-MAST.							
Sail Hallyards — —	2½	32	Single	9	2	1	1
Downhaller —	1½	15					
Jack Tackle —	1	4					
Bowline — —	3	12					
Bridles — —	3	1½					
Sheets — —	3	5	Single	9	1		3
Fore Burton Pendants, 1 Pair —	3	5½	Single	10	1		
Falls, 2 —	2½	24	Double	9	1		
			Single	9	2	2	2
MAIN-MAST.							
Girdlines, 2 — — —	2½	50	Single	9	2		
Laſhings, 2 —	1	8					
Pendants of Tackles, 2 —	4½	12	Single co.	14	2		
Runners of Tackles, 2 —	4½	22	L. tackle do.	24	2	2	2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Blocks, &c. Inches.	Blocks, &c. Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Falls, 2 — —	2½	46	Single th. c.	14	2	2	2
Shrouds cabled fine, 4 Pair —	6	78	Dead Eyes	10	8		
Seizings Eye, 4 —							
Throat, 8 —	1	60					
End, 8 —							
Lanyards, fine, 8 —	2½	32					
Ratling —	1	146					
Stay cabled, 4 Strands, fine —	9	12	Dead Eye	17	1		
Seizings, fine, 3 —	1½	9					
Lanyard, fine —	3	10					
Worming —	1	50					
Laſhing —							
Preventer Stay cab. 4 Strands							
Lanyards, fine							
Seizing —							
Boom Topping Lift —	3½	27	S. iron bound	13	1		1
Runner —	3	10	Single	13	1		
			Single	11	1		
Fall —	2	20	Double	9	1		
			Single	9	1	1	1
Guy Pendant —	4½	7					
Tackle Fall —	2½	20	Double	9	1	1	1
			Single	9	1	1	1
Gaff Span — —	4½	5					
Downhaller Peek	2	22	Single	7	2		
Throat —	2	32	Single	7	1		
Inner Tye — —	4½	14	S. iron-bo. coaked.	15	1	1	
Hallyard —	2½	36	D. c. th. do.	19	2	2	2
Outer Tye —	4½	15	S iron b. do.	15	1	1	
Hallyard —	2½	40	D. c. th. do.	19	2	1	1
Earings, Inner —	1½	4					
Outer —	1	8					
Reef, 2 —	3½	9				2	
Lacing — —	1	14					
Sheet — —	3	36	Double	14	2		
Rope —	2	5					

Sloops of 130 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
MAIN-MAST CONTINUED.							
Jack Tackle —	1¾	7	Double	7	1	1	1
			Single	7	1	1	1
Luff Tackles, No 1	2	16	Double	8	1	1	1
			Single	8	1	1	1
Main Reef Pendants, fine							
TOP-MAST.							
Tackle Fall — —							
Tye — —							
Hallyard — —	2	30					
Horſes — — —							
Braces, 2 — — —	1¼	36					
Lifts, 2 — — —	1¼	34					
Parrel Ropes — —							
Racking and Seizing —							
Clewlines — —							
Buntlines — — —							
Bowlines, 2 — —	1	34					
Bridles, 4 — —	1	4					4
Sheets, 2 — —	1¼	34					
Quarter Block —							
Tryſail Sheet —							
Downhaller —							
Lacing —			None				
Studdingſail Hallyards							
Sheets —							
Tacks —							
Downhallers —							
TOP-GALLANT-MAST.							
Standing Backſtays —							
Tackles — —							
Stay — — —							
Hallyards — —							
Top Rope — —							
Fall — — —							
Tricing Line — —							
CROSS-JACK-YARD.							
Clewlines — —							
Braces, 2 — —	1¼	40	Single	6	2		
Sheets, 2 — —	2¼	15					
Hallyard — —	2	48	Double	8	2	2	2
Liſts running —							
Buntlines — —							
Tacks, 2 — —	2½	15				2	2
Horſes — —							
Stirrups — —							
Horſe down the Maſt —	4	15					4
Strap — —							
Lanyard — —							
Yard Ropes — —	2	40	Single	8	2		

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles
NECESSARY ROPES.							
Cat Falls, 2 — —	3¾	8	D. I. bound	12	2		
Fiſh Tackle Pendant — —	3¼	5				1	1
Stoppers Sheet Anchor —	3	8					
Beſt Bower — —	3	8					
Small Bower — —	3	8					
Stream Anchor —	3	8					
Kedge ditto — —	3	8					
Deck and Bit, cabled							
Lanyards							
Seizings —							
Shank painters Sh. cab. —	3	8					
Beſt Bower —	3	8					
Small Bower —	3	8					
Ropes Buoy Sheet cabled —	2¼	18					
Beſt Bower — —	2¼	18					
Small Bower — —	2¼	16					
Stream Anchor —							
Kedge ditto —							
Entering — —							
Wheel (white) —							
Puddening of Anchors, worn —	2	25	worn				
	2	25	worn				
	2	25	worn				
	2	25	worn				
	2	25	worn				
Buoy Slings — — —	2½	10					
Hogſhead Slings, 1 Pair	3	3					1
Can-Hooks —							
Cable Bends, 6 — —	1	12					
Nettings for the Tops, Quart.							
Waſte, and Barricadoes —							
Hallyards for Enſigns —							
Slings Pendant, &c. —							
For different Uſes of the Ship							
Ridge Ropes for the Quarters							
BOAT.							
Hallyards, Main and Fore —							
Sheets, Main and Fore —							
Grapnel Ropes, cabled —							
Painter — — —	3	7					
Slings — —							
Seizings — —							
Rudder Lanyards — —							
Sternfaſt — — —							

FITTING the RIGGING in the HOUSE.

Spunyarn — — —	8 cwt.
Lines tarred — — —	4 No.
Marline — — —	10 lb.
Old Canvas — — —	50 yards
Tar — — —	½ barrel
Tallow — — —	28 lb.
Twine Ordinary — — —	1 lb.
Length of the Warp of the Main Shrouds	17 yards

A TABLE
OF THE
QUANTITIES AND DIMENSIONS
OF THE
Standing and Running Rigging
TO
KETCHES OF 150 TONS.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
BOWSPRIT.							
Strap — — —	2 1/2	3					
Gammoning — —	3 1/2	20					
Shrouds, fine, 1 Pair — —	3 1/2	14	Dead Eyes	7	4	2	2
Lanyards, fine, 2 —	1	6					
Bobſtay cabled, fine, 2 Pair —	3	6	Dead Eyes	6	2		
Collars, fine, 2 —	2 1/2	3					
Lanyards, fine, 2 —	1 1/2	3 1/2					
Horſes, 2 — — —	3	14	worn				
Lanyards, 2 —	1 1/2	4					
Sheets cabled —	2	16					
Ropebands and Earings —	1/2	25					
Hallyards — {	2 1/2	16	Single	8	1		
			Iron Cring.		30		
JIBB.							
Stay cabled, 4 Strands —	4 1/2	24	Single	10	2		2
Sheets, 2 — — —	4 1/2	16				1	1
Tack — —	2	28					
Hallyard — —	2	36	Single	10	1	1	1
Ditto — — —	1 1/2	55	Single	7	2		
Downhaller — — —	2	20	Single	7	1	1	1
Brails, 2 — — —	1 1/2	20					
Lanyards, 2 — —	1 1/2	4					
Boom Hallyards — —	2	17					
Inhaller — —	1 1/2	18					
FORE-SAIL.							
Hallyard — — {	2 1/2	30	Iron Cring.		30		
			Single	8	2	1	1
Downhaller — — —	1 1/2	16	Single	7	1		1
Bowline — — —	2	20					
Sheets tapered and cabled, 2 —	2 1/2	40	Double	10	4	4	4
MAIN-MAST.							
Girdlines, 2 — — —	2 1/2	40	Single	9	2		
Laſhings, 2 —	1	8					
Pendants of Tackles cab. fine, 2	4	12	Long Tackle	20	1	1	1
			Single	12	1	1	1
Seizings, 2 —	1/4	10					
Runners of Tackles, 2 {	3 1/2	12	Long Tack.	20	1	1	1
			Single	11	2	2	2

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Falls, 2 — — —	2	64					
Shrouds cabled, fine, 6 Pair —	6	120	Dead Eyes	9	12		
Seizings Eye, 6 — —	1	100					
Throat, 12 — —		50					
End, 12 — —		50					
Worming — —		540					
Lanyards, fine, 12 —	3	48					
Ratling —	1	160					
Stay cabled, 4 Strands, fine —	10	12	Dead Eyes	16	1		
Seizings, 3 — —	1 1/2	8					
Worming — —	1	64					
Lanyards, fine — —	3 1/2	18					
Mouſeing — —		45					
Catharpin Legs, 3 — —	1	16					
Burton Tackle Runners, 2 —	3 1/2	11	Single	11	2		
Falls, 2 — —	2	24	Single	13	1	1	1
Crowfoot for the Top —	1	24	Euphro	14	1		
Tackle — — —	1 1/2	3	Single	7	2		
			Double	15	1		
Jeers { Tye — — / Falls, 2 — — }	4 1/2	44	Single	15	3		
Laſhers to the Maſt Head, 2 —	2	10	Double ſc.				
Yard — — —	2	10					
Horſes, 2 — —	3	10					2
Lanyards — —	1 1/2	4					
Braces, 2 — —	2 1/2	50	Single	10	2		
Pendants, 2 —	3	8	Single	10	2		
Lifts, 2 — —	2 1/2	60	Single	10	2		
Span for Cap — —	3 1/2	3	Single	10	2		
Parrel Ropes, 2 — —	3	14	Parrel	16	1		
Nave Line — —	1 1/2	18					
Racking and Seizings —	1	18					
Main — —	1 1/2	26	Single	7	2		
Brails, Middle — —	1	26					4
Lower — —	1	24					4
Hanks — —	2	15					
Truſs { Pendant — — / Falls — —	4 / 2	9 / 12	Double	7	1		
Clewgarnets, 2 — —	2 1/2	60	Sin. Straped	10	4		
Buntline Legs Falls, 2 Pair {	2	80	Long Buntl	14	2		
			Single	8	8		4

Ketch of 150 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-MAST CONTINUED.							
Leechline Legs Falls, 2 —	2	40	Single	8	4		2
Bowlines, 2 —	4	36	Double	14	1		
Bridles, 4 —	4	12					4
Ropebands and Earings —	1	60					
Sheets tapered and cab. 2	4¼	18	Sin. Should.	14	2		2
Tacks tapered and cabled, 2 —	5¼	26					
Wingſail Guys, and Lee fangs —	1¾	30					
Hallyard — —	2	40	Double	10	2		
Sheets, 2 — —	2	44	Double	9	4		
Topping Lift —	2	36					
Span — —	2	3					
Luff Tackle —	2	20	Long Tackle	16	1	1	1
			Single	10	1	1	1
Studding Sail Hallyards Inner and Outer, 2 Pair	2	40	Single	8	4		
Sheets, 2 Pair —	1¾	10	Single	8	2		
Tacks, 2 Pair —	1¾	20					
MAIN-TOP-MAST.							
Shrouds, fine, 3 Pair —	3¼	33	Dead Eyes	6	6	6	6
Seizings Eye, 3 —	¾	6					
Throat, 6 —	¾	9					
End, 6 — —	¾	9					
Lanyards, fine, 6 —	2	18					
Ratling — —	¾	50					
Standing Backſtays, fine, 2 Pr.	3½	30	D. Eyes I. b with Hooks	6	2		4
Seizings Eye, Throat, End,	¾	10					
Lanyards, fine —	2	10					
Stay cabled, 4 Strands, fine	3½	26	Single	10	1		
				9	1		
				8	2		
Runners, fine	3½	14	Single	7	1		2
Lanyards	1¼	4					
Shifting Backſtays, fine, 1 Pair	3¼	16					1
Tackle —	1¼	10	Single	7	2	2	2
Seizings —	¾	5					
Futtock Shrouds, fine, 4 Pair	3½	10	Plates with Dead Eyes	6	6	6	6
Seizings Upper Lower	¾	12					
Ratling —	¾	12					
Top Rope Pendant, fine	4¼	13					1
Fall —	2	40	Double	9	1	1	1
			Single	8	2	1	1
Tye — — —	3¼	14	Single	12	2		
Laſhers at the Maſt Head, 2 —	1	4					
Yard —	1	2					
Hallyard — — —	2	34	Double	11	1		
			Single	11	1	1	1
Horſes, 2 — — —	2¼	7					
Braces, 2 — — —	2	50	Single	8	2		
Pendants, 2 — —	2¼	6	Single	8	2		
Lifts, 2 — — —	2	52	Single	8	4		
Beckets, 2 — —	2	2					
Parrel Ropes, 2 — —	2	8	Parrel	11	1		

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks.	Iron Thimbles.
MAIN-TOP-MAST CONTINUED.							
Racking and Seizing —	¼	8					
Clewlines, 2 — — —	2	60	Sin. ſtrap	7	4		
			bound	7	4		
Buntlines, 2 — — — —	1¼	30	Single	7	2		2
Leechlines, 2 — — — —	1¼	18	Single	7	2		
Bowlines, 2 — — — —	2	50	Single	8	2		2
Bridles, 4 —	2	12					4
Ropebands and Earings —	¼	35					
Sheets tapered, 2	3½	44	Sin. Shoul. doub. quart.	14	2		
Laſhers for Quarter Blocks, 2 —	1	5					
Span — —	3	3					
Studdingſail Hallyards, 2 Pair —	1¼	70	Single	7	8		
Sheets, 2 Pair —	1¼	6					
Tacks, 2 Pair — —	1½	46	Single	7	4		
Bowlines, 2 — —	1	28					
TOP-GALLANT-MAST.							
Hallyards — —	1½	40	Single	7	2		
Braces — —	1	40					
Clewlines — —	1	40	Single	6	4		4
MIZEN-MAST.							
Girdlines, 2 — —	2	30	Single	7	2		
Laſhings, 2 —	1	4					
Shrouds, fine, 3 Pair —	3	36	Dead Eyes	6	6		
Seizings, Eye, 3 —	¾	6					
Throat, 6 — —	¾	9					
End, 6 — —	¾	9					
Lanyards, fine, 6 —	1¼	10					
Ratling — —	¾	50					
Stay cabled, 4 Strands, fine —	3¼	12	Dead Eyes	6	2		
Lanyards, fine —	1¼	6					
Hallyard and Strap — —	1½	35					
Jeers — —	2	16	Double	7	1		
			Single	7	1		
Laſhers at the Maſt Head —	1	5					
Yard — — —	1	2					
Derrick — —	2	20	Single	8	3		
Span — —	2	3	Sing. ſnatch	12	1		
Yard Rope Pendants — —	2	6	Single	6	2		
Fall — —	2	20	Single	6	2		2
Backſtays, 1 Pair —	2¼	12	Dead Eyes	6	2		
Lanyards, 2 —	1¼	7					
Brail Peek Legs, 2 Pair —	¼	28	Single	6	4		8
Main — —	1½	12	Single	6	4		2
Lower — —	1	50					
Lacing Mizen to Yard —	¼	10					
Earings and Ropebands —	1	4					
Sheet — —	2	7	Single	8	2	2	2
Stayſail Hallyard — —	1½	24	Single	7	2		
Sheet — —	2	4					
Tack — —	2	4					
CROSS-JACK-YARD.							
Braces, 2 — —	1¼	24	Single	6	4		
Lanyards, 2 —	¾	3					
Lifts Standing, 2 — —	1½	4					4

Ketch of 150 Tons.

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number.	Iron Hooks	Iron Thimbles
CROSS-JACK-YARD CONT.							
Strap — —	1¾	2					2
Slings, 1 Pair — —	2	2					1
Worming for the Bowſprit, Main Top and Mizen Shrouds, and Backſtays	No. 36, whitelines of 12 threads						
MIZEN-TOP-MAST.							
Shrouds, fine, 2 Pair —	2	12					8
Lanyards, fine —		5					
Standing Backſtays, fine, 1 Pair	1¾	20					
Lanyards, fine, 2 —	1	4					
Stay cabled, 4 Strands, fine —	1	14					
Futtock Shrouds, fine, 2 Pair —	1½	4					4
Tye — — —	2	4	Single	7	1		
Hallyard — —	1¾	16	Single	7	2		
Horſes, 2 — —	2	5					
Braces, 2 — —	1½	22	Single	6	2		
Lifts, 2 — —	2	18	Single	6	2		2
Parrel Ropes, 2 — —	1¾	4					
Clewlines, 2 — —	1¾	22	Single	6	2		
Bowlines, 2 — —	1¾	24	Single	6	2		4
Bridles, 4 — —	1	6					2
Earings and Ropebands —	¾	25					
Sheets, 2 — —	2	20	Single	8	4		
NECESSARY ROPES.							
Cat Falls, 2 —	2½	14	Double Iron-bound	12	2		
Fiſh Tackle Pendant —	4	3	Single Double ſco.	12	1	Fiſh 1	2
Fall —	2	22	Double	10	1	1	2
			Single	10	1	1	1
Stoppers, Sheet Anchor Beſt Bower Small Ditto Deck and Bit cabled No. 10 —	4	8					
Lanyards, 10 —	1½	4					8

Names of the ſtanding and running Rigging.	Inc. in Circumf.	Fath. in Leng.	Blocks, &c. Species.	Inches.	Number	Iron Hooks.	Iron Thimbles
NECESSARY-ROPES CONT.							
Seizings, 20 — —	¾	10					
Shank Painter — —							
Sheet Anchor, cabled —							
Beſt Bower	3	6					
Small Ditto							
Rope Buoy — —							
Sheet Anchor, cabled —	4	18					
Beſt Bower, cabled —	4	18					
Small Ditto, ditto —	4	18					
Puddening of Anchors —	2	30	worn				
Seizings — —	¾	30					
Slings Buoy — —	2¼	16					1
Straps, 2 — —	2	4					
Butt, 1 Pair — —	4	4¼					1
Hogſhead, 1 —	3¼	3½					1
Cable Bends, 6 — —	1¾	30					
Futtock Staves —	5	3					
	3	1½					

Length, &c.	Yards	Fathom
Main Top Maſt Ditto	18	1
Main Backſtays —	10	2
Mizen Shrouds —	28	2
	11	2

For FITTING the RIGGING in the HOUSE.

Species.	Quantity.
Spunyarn — —	16 Cwt.
Lines tarred — —	12 Number
Marline ditto — —	12 lb.
Old Canvas — —	60 yards
Tar — —	1 barrel
Tallow — —	28 lb.
Twine ordinary — —	1 lb.

END OF THE TABLE OF DIMENSIONS.